SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY
340 N. 11TH ST. SUITE 150
LAS VEGAS, NV 89101
March 2012

# VCA Compliance
# UFAS/ADA Wheelchair Accessibility
# at Jones Gardens

# IFB#: B12138

## NOTIFICATION OF INTEREST

**This form notifies the SNRHA that your company is participating in this bid process. It is required that all companies who download this bid package return this form to the SNRHA. Only companies who return this form will be sent any notices and/or addendums related to this IFB.**

**PLEASE PRINT**

| | |
|---|---|
| Company Name: | |
| Contact Person: | |
| Title: | |
| Phone #: | |
| Mobile #: | |
| Fax #: | |
| Email: | |
| Street Address: | |
| City, State, Zip: | |

**WHEN YOU OBTAIN THIS BID PACKAGE THIS FORM MUST BE FAXED OR EMAILED TO:**

**Amparo Gamazo**
**Director of Development/Modernization**
**Southern Nevada Regional Housing Authority**
**Email: amgamazo@snvrha.org**
**Fax: 702-922-6080**

# Invitation for Bid: # B12138

## VCA Compliance
## UFAS/ADA Wheelchair Accessibility
## at Jones Gardens

## March 2012

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BIDS ACCEPTED AT:

**SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY**
**Development/Modernization Department**
**340 N. 11th Street, Suite 150, Las Vegas, NV 89101**
**(702) 922-6060 • FAX (702) 922-6080 • TDD (702) 387-1898**

DATE BIDS ACCEPTED:

**Until Friday, April 13, 2012 at 10:00 a.m. (local time)**

PUBLIC BID OPENING HELD AT:

**SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY**
**Development/Modernization Department**
**340 N. 11th Street, Suite 150, Las Vegas, NV 89101**
**(702) 922-6060 • FAX (702) 922-6080 • TDD (702) 387-1898**

DATE OF PUBLIC BID OPENING:

**Friday, April 13, 2012 at 10:15 a.m. (local time)**

PRE-BID CONFERENCE AT:

**Thursday, March 29, 2012, at 10:00 a.m. at the site located at 1750 Marion Drive, Las Vegas, Nevada. 89115**

---

Awarded:

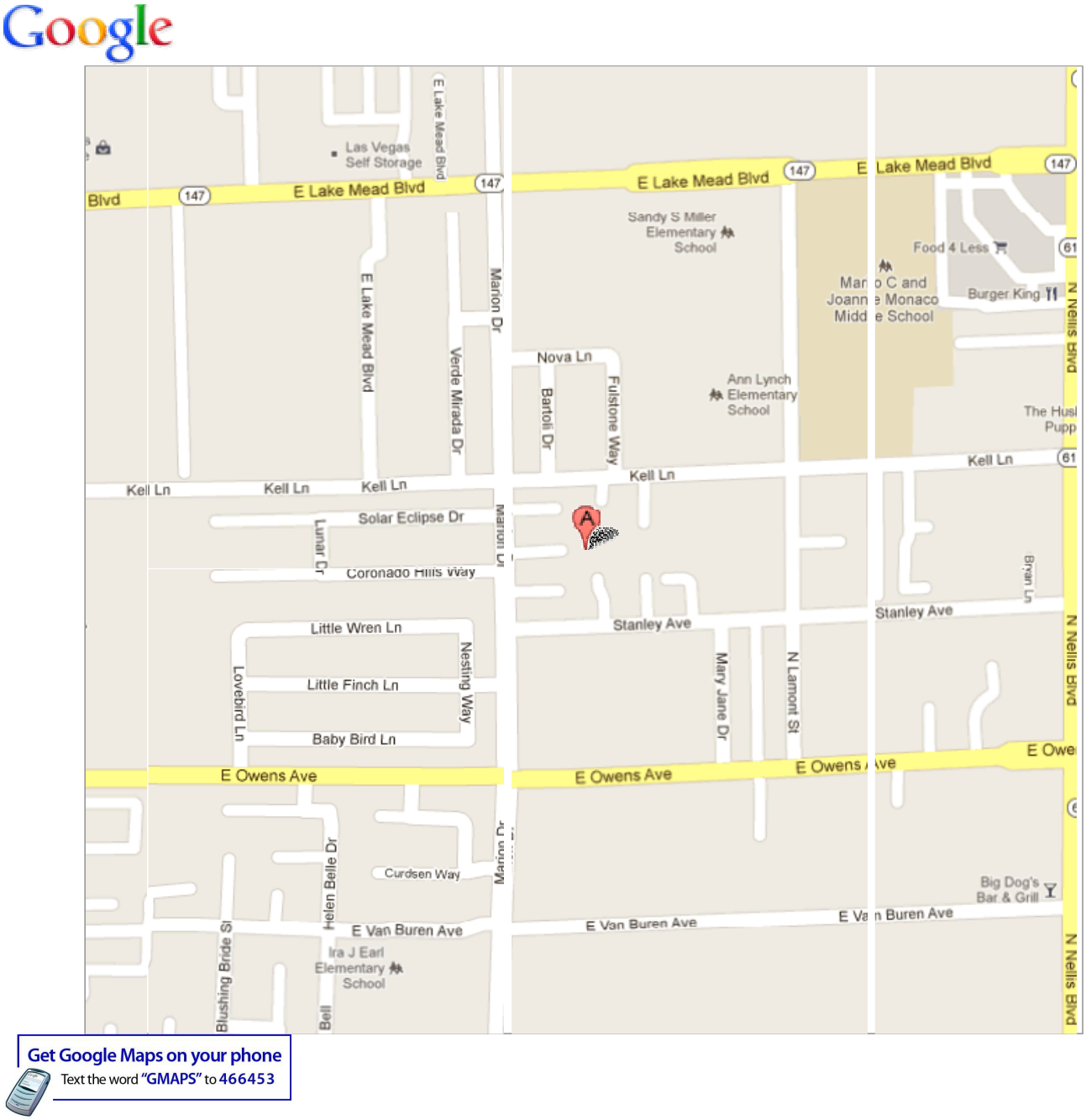
_____
Contractor Date

_____
Pugsley Simpson Coulter, Architects Date
2480 E. Tompkins, Suite 222
Las Vegas, NV 89121
(702) 435-1150

_____
Southern Nevada Regional Housing Authority Date
340 N. 11th Street
Las Vegas, NV 89101
(702) 922-6060

SET # _____

Address **1750 Marion Dr**
**Las Vegas, NV 89115**

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# TABLE OF CONTENTS

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# INVITATION FOR BID – IFB # B12138

1. THE SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY, NEVADA, herein called "SNRHA," will receive sealed bids from qualified and licensed Contractors for the following work:

   **Provide labor, equipment and materials to bring Jones Gardens Site, five (5) units, Management Office and Community Center located at 1750 Marion Drive, Las Vegas, NV. 89115, into compliance with 504/UFAS/ADA wheelchair accessibility pursuant to the attached specifications and drawings. The scope of the work includes but is not limited to: Modification to five (5) units, parking areas, sloped access to entrance and remodeling of the interior to accommodate wheelchair accessibility.**

   Until **10:00 a.m.** local time, **Friday, April 13, 2012,** at the **Development/Modernization Office of the Southern Nevada Regional Housing Authority, located at 340 N. 11th Street, Suite 150, Las Vegas, Nevada 89101**. At **10:15 a.m.** bids will be opened publicly and read aloud at the same office at **340 N. 11th Street, Suite 150, Las Vegas, Nevada 89101.**

2. Bidding Documents may be examined at the following local plan rooms: Construction Notebook, FW Dodge, Sierra Plan Room, Reed Construction Data or at the Development/Modernization Department offices of the SNRHA.

3. Bidding documents, specifications and any applicable drawings will be available for bidders to download from SNRHA website: **www.snvrha.org click on "Procurement**" then "**Current Bid Invitations" from the Vendor Center** "(follow the directions) or pick up a CD at no charge from the **SNRHA's Development/Modernization Department, 340 N. 11th Street, , Suite 150, Las Vegas, Nevada, 89101 - (702) 922-6060**. **NOTE:** Copies of bid documents received from sources other than the SNRHA will cause your bid to be deemed invalid. Contractor is responsible for the reproduction of bid package, specifications and any applicable drawings, as well as the costs associated with said reproduction.

4. Work to be performed is subject to Davis-Bacon wage requirements for all contracts where the construction is estimated to be over $2,000.

5. **This contract is subject to the conditions under Section 3** of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The SNRHA's Section 3 Plan contains mandatory numerical goals for hiring of residents and low and very low-income persons on all construction contracts, service contracts and professional service contracts that contain a labor component.

6. The SNRHA encourages Women, Minority and Disabled Veteran Owned firms to apply.

7. Each bid submitted must be accompanied by either: (a) a certified check or bank draft, payable to the Southern Nevada Regional Housing Authority; U. S. Government Bonds; or (b) a satisfactory bid bond executed by the bidder and acceptable sureties in an amount equal to five percent (5%) of the bid. The successful bidder will be required to furnish and pay for satisfactory performance and payment bonds.

8. Award will be made to the responsive and responsible low bidder who submits the low bid that meets all requirements of the conditions and Form of Bid, General Requirements, and Contract requirements.

9. Bidder must be a duly licensed contractor in the State of Nevada for the category of work included. Bidder must also be licensed to do business in the City and County having jurisdiction.

10. A Pre-Bid conference is scheduled for **Thursday, March 29, 2012** beginning @ **10:00 a.m. at the site located at1750 Marion Drive, Las Vegas, NV. 89115.** All prospective bidders should attend. The purpose is to consider prospective bidders concerns.

11. The SNRHA reserves the right to reject any and or all bids at any time during the bid process, or waive any informalities in the bidding.

12. Inquiries may be submitted in writing only to Southern Nevada Regional Housing Authority, Dev/Mod Dept., 340 N. 11th Street, Suite 150, Las Vegas, NV 89101 or via facsimile at (702) 922-6080 or at the SNRHA's TDD # (702) 387-1898.

**SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY**

**John N. Hill, Executive Director**

# INVITACION PARA OFERTAS – IFB # B12138

1. LA AUTORIDAD EN LA VIVIENDA REGIONAL DEL SUR DE NEVADA, referida como "SNRHA", recibirá ofertas selladas de Contratistas especializados con licencia para ejecutar el siguiente trabajo:

   **Proveer mano de obra, equipo y materiales para remodelar la propiedad de Jones Gardens, incluyendo las áreas exteriores, cinco (5) unidades de apartamento, la oficina de gerencia y el centro comunitario localizado en el 1750 Marion Drive, Las Vegas, NV. 89115, conforme a los requisitos para minusválidos 504/UFAS/ADA y accesibilidad a sillas de ruedas de acuerdo a las especificaciones y planos incluidos en el paquete de oferta. El trabajo incluye pero no esta limitado a: Modificaciones a cinco (5) unidades, áreas de parqueo, áreas de entradas y acceso y remodelación del interior para proveer accesibilidad a personas en sillas de ruedas.**

   Propuestas serán aceptadas hasta **10:00am,** hora local, el día **Viernes, Abril 13, 2012,** en la **Oficina de Desarrollo/ Modernización del SNRHA, localizada en el 340 North 11th Street, Oficina 150, Las Vegas, NV. 89101.** A las **10:15am** del mismo día las propuestas se abrirán públicamente y serán leídas en voz alta en la misma oficina en el **340 North 11th Street, Oficina 150, Las Vegas, NV. 89101.**

2. Pueden examinar las copias de los documentos de Oferta en las siguientes oficinas locales: Construction Notebook, FW Dodge Reports, Sierra Plan Room, Reed Construction Data o en la oficina de Desarrollo/Modernización del SNRHA

3. Documentos de Oferta, especificaciones y planos estarán disponibles a los contratista en la pagina del Internet del SNRHA: **www.snvrha.org** clic en la palabra "**Procurement**" siguiendo "**Current Bid Invitations,** localizado en el **Vendor Center** (siga las instrucciones) o puede recoger un disco compacto (CD), a no costo en **la oficina de Desarrollo/ Modernización del SNRHA, localizada en el 340 North 11th Street, Oficina 150, Las Vegas, NV. 89101 - (702) 922-6060**. **Por favor tome nota:** que copias de los documentos de oferta que sean obtenidas por otros medios que no sean el SNRHA causaran que su propuesta sea inválida. Contratista serán responsables por la reproducción de los planos y especificaciones y el costo asociado con dicha reproducción.

4. El trabajo que se llevara acabo esta sujeto a Davis Bacon requisitos de salarios y es aplicable a todos los contratos donde el costo de la construcción es más de $2,000 dólares

5. **Este contrato esta sujeto a las condiciones de la Sección 3** del Departamento de Desarrollo Urbano Acción 1968 enmendado, 12 U.S.C. 1701 u (Sección 3). El Plan de la Sección 3 del SNRHA contiene mandatarias metas numéricas para emplear residentes o personas de bajos o muy bajos recursos en todos los contratos de construcción, contratos de servicios y contratos de servicios profesionales que incluyan mano de obra.

6. SNRHA invita a los Negocios de la Minoría, Empresas de Mujeres (MBE, WBE) y Veteranos Deshabilitados a someter una oferta.

7. Cada oferta presentada debe ser acompañada por: (a) un cheque certificado del Banco, a nombre de Southern Nevada Regional Housing Authority, Nevada; bonos del Gobierno de U.S.; o (b) un bono de oferta satisfactoria llevada a cabo por el postor y garantías admisibles en una cantidad igual al (5%) de la oferta presentada con cada oferta . El mejor postor deberá proporcionar y pagar por la ejecución satisfactoria y pago de bonos.

8. Se otorgara el contrato al postor responsable que someta la oferta mas baja que cumpla con todas las Condiciones y Formas de la Oferta, Requerimientos Generales, y los Requisitos del Contrato/Oferta.

9. El Postor deberá tener Licencia de Contratista autorizada en el Estado de Nevada para la categoría del trabajo. El postor también debe tener licencia que le permita hacer negocios en la Ciudad y el Condado de Clark de la respectiva jurisdicción.

10. Una conferencia de Pre-Oferta esta programada para el día **Jueves, Marzo 29, 2012** comenzando a la **10:00 a.m, en la propiedad localizada en el 1750 Marion Drive, Las Vegas, NV. 89115.** Se recomienda a los posibles postores participar en las reuniones. El propósito de esta reunión es para responder las preguntas que tenga los posibles postores.

11. SNRHA se reservara el derecho de rechazar cualquiera o todas las ofertas, en cualquier momento durante el proceso de oferta, o rechazar cualquier oferta que tenga informalidades.

12. Favor dirigir por escrito cualquier pregunta técnica al Departamento de Contratación del SNRHA, localizada en el 340 North 11Th Street, Suite 150, Las Vegas, NV. 89101 o vía fax al (702) 922-6080 o al SNRHA's TDD (702) 387-1898.

**AUTORIDAD EN LA VIVIENDA REGIONAL DEL SUR DE NEVADA**

**John N. Hill, Director Ejecutivo**

# BID SUBMISSION AND FORMAT CHECKLIST

**IMPORTANT:** Each bidder **shall submit two (2) bid packages (1 original & 1 copy)** with numbered tabs that extend out from the sides of the pages. Proposers are also required to "Sign, Date, and Print Name" on each page of any form that has such at the bottom and will arrange the following **mandatory forms** under each TAB as follows

COMPANY NAME:

_____TAB 1. The **"Bid Submission and Format Checklist"**

_____TAB 2. The **"Bid Form"** signed with written amount and dollar figure. (include completed Scope of Work breakdown for each individual house)

_____TAB 3. The **"Bid Bond"** with an executed Bid Bond Form (see Alternate Bid Guarantee if necessary)

_____TAB 4. "Section 3 -**Contractor Initial Response"** form (Mandatory)

_____TAB 5. **Certification for Business Concerns"** form, if seeking a "Section 3" Business status

_____TAB 6. A complete **"Subcontractor's List"** with addresses is to be submitted at time of bid; **Subcontractors who are not submitted now Will Not be considered for approval**.

_____TAB 7. The **"Subcontractor Affirmative Action"** Form for each trade to be used

_____TAB 8. The **"Disclosure of Ownership"** Form (Prime Contractor & Subcontractors)

_____TAB 9. The **"Statement of Bidder's Qualifications"** Form

_____TAB 10. The **"Non-Collusive Affidavit"** Form

_____TAB 11. **"Certification of Payments to Influence Federal Transactions"** Form (HUD-50071)

_____TAB 12. **"Representation, Certifications and Other Statements of Bidders"** form (HUD 5369-A)

_____TAB 13. The **"Schedule of Amounts for Contract Payments"** (HUD-51000), form to be completed per instructions for Preparation of form (attached)

**Submit all items, unfolded, in an envelope (clearly marked with the above IFB #, name of company submitting and/or person submitting). If you are submitting as a "Section 3 Business," please indicate on the front of the package as well.**

**Proposers who wish not to have any proprietary information released to the public must indicate on each page of their bid that the information being provided is for the purpose of this solicitation only and shall not be disclosed outside of the Housing Authority.**

** **ANY ITEM LISTED HERE NOT INCLUDED WITH YOUR BID PACKAGE WILL CAUSE YOUR BID TO BE DEEMED "NON-RESPONSIVE"**

** **BIDDERS THAT FAIL TO COMPLETE ANY OF THE ABOVE FORMS, OR USE DIFFERENT FORMS, WILL BE DEEMED "NON-RESPONSIVE"**

Signature Date Printed Name

# BID FORM



Gentlemen:

1. The undersigned, having familiarized _____ with the local conditions affecting the cost of the work, and with the specifications (including Invitation for Bids, Instructions to Bidders, this Bid, the form of Bid Bond, the form of Non-Collusive Affidavit, the form of Contract, and the form of Performance and Payment Bond or Bonds, the General Conditions, the Special Conditions, Equal Employment Opportunity Requirements, the General Scope of Work, the Technical Specifications and Drawings) and Addenda, if any, thereto as prepared by the Southern Nevada Regional Housing Authority (SNRHA herein),and at the office of the architect, hereby proposes to complete the work in conjunction with the construction **of Bid #B12138 – VCA Compliance - UFAS/ADA Wheelchair Accessibility at Jones Gardens,** in accordance with the Contract Documents within the time set forth therein and at the prices set forth below:

2. BID SUBMISSION LOCATION, DATE AND TIME: **Development/Modernization Office of the Southern Nevada Regional Housing Authority, 340 N. 11th Street, Suite 150, Las Vegas, Nevada 89101 on Friday, April 13, 2012 @ 10:00 a.m. **NO BIDS WILL BE ACCEPTED AFTER THAT TIME****

3. BASE PROPOSAL: The bidder agrees to furnish all labor, materials, equipment and services to construct and complete the project as described and required by the herein above stated Document and any Addenda, in accordance therewith for the sum of:

   **(NOTE: MUST BID ON ENTIRE PROJECT. BIDS FOR INDIVIDUAL ITEMS WILL BE DEEMED NON-RESPONSIVE. THE BID WILL BE AWARDED TO THE OVERALL BIDDER WHO MEETS ALL REQUIREMENTS OF THIS INVITATION FOR BID)**

**TOTAL BASE BID**

_____ Dollars ( $ _____ )
(Written Dollar Amount)

**BID BREAKDWON BY WORK:**

**(1) Base Bid - Site Work** **$**_____

**(2) Base Bid - Dwelling Units Work** **$**_____

**(3) Base Bid - Non-Dwelling Bldg /Areas Work** **$**_____

Signature Date Printed Name

# BID FORM



4. In submitting this bid, it is understood that the right is reserved by the SNRHA to reject any and all bids. If written notice of the acceptance of this bid is mailed, telegraphed or delivered to the undersigned within (30) days after the opening thereof, or at any time thereafter before this bid is withdrawn, the undersigned agrees to execute and deliver within ten (10) days after the contract is presented to him for signature.

5. Security in the sum of _____ Dollars ($ _____), in the form of _____ is submitted herewith in accordance with the Specifications.

6. Attached hereto is an affidavit in proof that the undersigned has not entered into any collusion with any person in respect to this proposal or any other proposal or the submitting of proposals for the contract for which this proposal is submitted.

7. The bidder represents that he has ( ), has not ( ), participated in a previous contract or subcontract subject to the Equal Opportunity clause prescribed by Executive Orders 10925, 11114 or 11246 or the Secretary of Labor; that he has ( ), has not ( ), filed all required compliance reports; and that representations indicating submission of required compliance reports, signed by proposed subcontractors, will be obtained prior to subcontract awards. (The above representation need not be submitted in connection with contracts or subcontracts, which are exempt from the clause.)

8. Certification of Non-segregated Facilities: By signing this bid, the bidder certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. He certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term, "segregated facilities" means any waiting rooms, work areas, rest rooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage provided for employees which are segregated by explicit directive or are, in fact, segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. He further agrees that (except where he has obtained identical certifications from proposed subcontractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontract exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity clause; that he will retain such certifications in his files; and that he will forward a notice of his proposed subcontractors as provided in the SNRHA instruction to bidders.

Signature Date Printed Name

# BID FORM



9. Right to Reject or Terminate: The SNRHA reserves the right to reject any an all bids or to waive any informalities in the process. No bid submitted shall be withdrawn for a period of sixty (60) days subsequent to the opening of proposals, or one hundred twenty days (120) days should HUD approval be required, without the express written consent of the SNRHA Development/Modernization Director. The SNRHA reserves the right to terminate the bid process or to terminate any award at any time for its convenience, or the cancel the sward and make award to the next qualified bidder if the original successful bidder is not able to deliver the required services in a satisfactory manner within the terms outlined within the plans and specifications of these documents.

**NOTE: THE PENALTY FOR MAKING FALSE STATEMENTS IN OFFERS IS PRESCRIBED IN 18 U.W.C. 1001.**

**THE FOLLOWING ADDENDA AND/OR _____ ARE HEREBY ACKNOWLEDGED AS BEING INCLUDED IN THIS BID (Failure to acknowledge may cause bid rejection):**

Addendum #: _____ Date: _____

Addendum #: _____ Date: _____

Addendum #: _____ Date: _____

Other: _____ By: _____

_____ _____
(Print or type name of person signing above)

_____ Title: _____

_____ _____
Name of person submitting bid Date

_____ _____
Company Name Phone Number

_____ _____
Address Fax Number

_____
City, State, Zip

Signature Date Printed Name

# BID BOND



KNOW ALL MEN BY THESE PRESENTS, that we the undersigned,

_____ as PRINCIPAL and
(Name of Principal)

_____ as SURETY, are held and firmly bound
(Name of Surety)

unto the Southern Nevada Regional Housing Authority, hereinafter called the "SNRHA," in the penal sum of

_____ Dollars, lawful money of the United States,
(Written Sum)

for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid, dated _____, 20___ for:

_____

_____

_____

_____

NOW THEREFORE, if the principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period be specified within sixty (60) days after the said opening, and shall within the period specified therefore, or if no period be specified, within ten (10) days after the prescribed forms are presented to him for signature, enter into a written contract with SNRHA in accordance with the bids as accepted and give bond with good and sufficient surety or sureties, as required by the U. S. Treasury Circular No. 570, sureties acceptable to the government, for the faithful performance of and proper fulfillment of such contract; or in the event of the withdrawal of said bid within the period specified, or the failure to enter into such contract and given such bond within the amount specified in said bid and the amount for which SNRHA may procure the required work or supplies or both, if the latter amount be in excess of the former, the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

Signature Date Printed Name

# BID BOND



IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this _____ day of _____, 20____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

ATTEST:

_____
(Sole Proprietorship or Partnership)

_____
(Individual Principal Signature)

_____
(Business Address)

(Seal)

_____
(Name of Individual Principal above)

OR ATTEST:

_____
(Corporation)

_____
(Corporate Principal Signature)

_____
(Business Address)

_____
(Name of Corporate Principal above)

_____
(Title)

(Seal)

Signature Date Printed Name

# BID BOND



ATTEST:

_____
(Surety Company)

_____
(Corporate Surety Signature)

_____
(Corporate Surety Signature)

_____
(Business Address)

By: _____

_____
(Title)

(Seal)

_____
(Power of Attorney for person signing Surety Company must be attached to the Bond)

## CERTIFICATION FOR BUSINESS CONCERNS SEEKING SECTION 3 PREFERENCE IN CONTRACTING AND DEMONSTRATION OF CAPABILITY

NAME OF BUSINESS: _____

ADDRESS OF BUSINESS: _____

TYPE OF BUSINESS: ☐ Corporation ☐ Partnership ☐ Sole Proprietorship ☐ Joint Venture

****Please provide the required documentation listed in the category for which you are claiming preference:**

### 1. FOR BUSINESS CLAIMING STATUS AS A SECTION 3 RESIDENT-OWNED ENTERPRISE

☐ Copy of resident lease ☐ Other evidence ☐ Copy of evidence of participation in a public assistance program

**For the business entity as applicable:**

☐ Copy of Articles of Incorporation
☐ Assumed Business Name Certificate
☐ List of owners/stockholder and % of each
☐ Latest Board minutes appointing officers
☐ Organization chart with names and titles and brief functional statement
☐ Certificate of Good Standing
☐ Partnership Agreement
☐ Corporation Annual Report
☐ Additional documentation

## OR

### 2. FOR BUSINESS CLAIMING SECTION 3 STATUS BY SUBCONTRACTING 25% OF THE DOLLAR AWARDED TO QUALIFIED SECTION 3 BUSINESS

☐ List of subcontracted Section 3 business and subcontract amount AND
☐ Copy of certification from City of Las Vegas or Clark County OR
☐ List of the qualifying subcontractors employees, indicating Section 3 status & tax return for the qualifying year

## OR

### 3. FOR BUSINESS CLAIMING SECTION 3 STATUS, CLAIMING AT LEAST 30% OF THEIR WORKFORCE ARE CURRENTLY SECTION 3 RESIDENTS OR WERE SECTION 3 ELIGIBLE RESIDENTS WITHIN 3 YEARS OF DATE OF FIRST EMPLOYMENT WITH THE BUSINESS

☐ List of all current full time employees AND
☐ PHA Residential lease (less than 3 years from date of employment) OR

☐ List of all employees claiming Section 3 status AND
☐ Tax return for the year employee is claiming eligibility (Must be in the last 3 years – 2011, 2010, or 2009)

_____
Authorizing Name and Signature

_____
Title

# SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY

## PREFERENCE FOR SECTION 3 BUSINESS CONCERNS IN CONTRACTING OPPORTUNITIES

The Southern Nevada Regional Housing Authority has established the following priority for preference when providing contracting opportunities to Section 3 Businesses:

**Priority I**

**Category 1a Business**

Business concerns that are 51 percent or more owned by residents of the housing development or developments for which the Section 3-covered assistance is expended.

**Priority 2**

**Category 1b Business**

Business concerns whose workforce includes 30 percent of residents of the housing development for which the Section 3-covered assistance is expended, or within three (3) years of the date of first employment with the business concern, were residents of the Section 3-covered housing development.

**Priority 3**

**Category 2a Business**

Business concerns that are 51 percent or more owned by residents of any other housing development or developments.

**Priority 4**

**Category 2b Business**

Business concerns whose workforce includes 30 percent of residents of any other public housing development or developments, or within three (3) years of the date of first employment with the business concern, were “Section 3” residents of any other public housing development.

**Priority 5**

**Category 3 Business**

Business concerns participating in HUD Youth-build programs being carried out in the metropolitan area in which the Section 3-covered assistance is expended.

**Priority 6**

**Category 4a Business**

Business concerns that are 51 percent or more owned by Section 3 residents in the metropolitan area, or whose permanent, full-time workforce includes no less than 30 percent of Section 3 residents in the metropolitan area, or within three (3) years of the date of employment with the business concern, were Section 3 residents in the metropolitan area.

**Priority 7**

**Category 4b Business**

Business concerns that subcontract in excess of 25 percent of the total amount of subcontracts to Section 3 business concerns.

**Eligibility for Preference**

A business concern seeking to qualify for a Section 3 contracting preference shall certify or submit evidence that the business concern is a Section business concern.

of solicitation provides for participation by a reasonable number of competitive sources. At the time of solicitation, the parties must be informed of:

- the section 3 covered contract to be awarded with sufficient specificity;
- the time within which quotations must be submitted; and
- the information that must be submitted with each quotation.

(B) If the method described in paragraph (i)(A) is utilized, there must be an attempt to obtain quotations from a minimum of three qualified sources in order to promote competition. Fewer than three quotations are acceptable when the contracting party has attempted, but has been unable, to obtain a sufficient number of competitive quotations. In unusual circumstances, the contracting party may accept the sole quotation received in response to a solicitation that provided the prices is reasonable. In all cases, the contracting party shall document the circumstances when it has been unable to obtain at least three quotations.

(ii) Award. (A) Where the section 3 covered contract is to be awarded based upon the lowest price, the contract shall be awarded to the qualified section 3 business concern with the lowest responsive quotation, if it is reasonable and no more than 10 percent. higher than the quotation of the lowest responsive quotation from any qualified source. If no responsive quotation by a qualified section 3 business concern is within 10 percent of the lowest responsive quotation from any qualified source, the award shall be made to the source with the lowest quotation.

(B) Where the section 3 covered contract is to be awarded based on factors other than price, a request for quotation shall be issued by developing the particulars of the solicitation, including a rating system for the assignment of points to evaluate the merits of each quotation. The solicitation shall identify all factors to be considered, including price or cost. The rating system shall provide for a range of 15 to 25 percent of the total number of available rating points to be set aside for the provisions of preference for section 3 business concerns. The purchase order shall be awarded to the responsible firm whose quotations is the most advantageous, considering price and all other factors specified in the rating system.

(2) *Procurement by sealed bids (Invitations for Bid).* Preference in the award of section 3 covered contracts that are awarded under a sealed bid (IFB) process may be provided as follows:

(i) Bids shall be solicited from all businesses (section 3 business concerns, and non-section 3 business concerns). An award shall be made to the qualified section 3 business concern with the highest priority ranking and with the lowest responsive bid if that bid-

(A) is within the maximum total contract price established in the contracting party's budget for the specific project for which bids are being taken, and

(B) is not more than "X" higher than the total bid price of the lowest responsive bid from any responsible bidder. "X" is determined as follows:

| | x=leaser of: |
|---|---|
| When the lowest responsive bid is less than $100,000 | 10% of the bid or $9,000 |
| When the lowest responsive bid is: | |
| At least $100,000, but less than $200,000 | 9% of that bid, or $16,000 |
| At least $200,000, but less than $300,000 | 8% of that bid, or $21,000 |
| At least $300,000, but less than $400,000 | 7% of that bid, or $24,000 |
| At least $400,000, but less than $500,000 | 6% of that bid, or $25,000 |
| At least $500,000, but less than $1 million | 5% of that bid, or $40,000 |
| At least $1 million, but less than $2 million | 4% of that bid, or $60,000 |
| At least $2 million, but less than $4 million | 3% of that bid, or $80,000 |
| At least $4 million, but less than $7 million | 2% of that bid, or $105,000 |
| $7 million or more | 1½ % of the lowest responsive bid, with no dollar limit |

(ii) if no responsive bid by section 3 business concern meets the requirements of paragraph (2)(i) of this section, the contract shall be awarded to a responsible bidder with the lowest responsive bid.

(3) *Procurement under the competitive proposals method of procurement (Request for Proposals (RFP)).* (i) For contracts and subcontracts awarded under the competitive proposals method of procurement (24 CFR 85.36 (d)(3)), a Request for Proposals (RFP) shall identify all evaluation factors (and their relative importance) to be used to rate proposals.

(ii) One of the evaluation factors shall address both the preference for section 3 business concern and the acceptability of the strategy for meeting the greatest extent feasible requirement (section 3 strategy), as disclosed in proposals submitted by all business concerns (section 3 and non-section 3 business concerns). This factor shall provide for a range of 15 to 25 percent of the total number of available points to be set aside for the evalaution of these two components.

(iii) The component of this evaluation factor designed to address the preference for section 3 business concerns must establish a preference for these business concerns in the order of priority ranking as described in 24 CFR 135.36.

(iv) With respect to the second component (the acceptability of the section 3 strategy). the RFP shall require the disclosure of the contractor's section 3 strategy to comply with the section 3 training and employment preference, or contracting preference, or both, if applicable. A determination of the contractor's responsibility will include the submission of an acceptable section 3 strategy. The contract award shall be made to the responsible firm (either section 3 or non-section 3 business concern) whose proposal is determined most advantageous, considering price and all other factors specified in the RFP.

Dated: June 27, 1994.

**Roberta Actenberg,**

*Assistant Secretary for Fair Housing and Equal Opprotunity*

[FR Doc.94-15951 Filed 6-29-94; 8:45am]

BILLING CODE 4210-28-P

**Office of the Secretary**

**24 CFR Subtitle A and Parts 92, 219, 280, 570, 572, 574, 576, 583, 882, 889, 890, 905, 961 and 963.**

[Docket No. R94-1678; FR-3536 F-01]

RIN 2501-AB64

## Economic Opportunities for Low- and Very Low-Income Persons-Conforming Amendments

**AGENCY:** Office of the Secretary, HUD

**ACTION:** Final Rule

**SUMMARY**: Section 3 of the Housing and Urban Development Act of 1968 (section 3), as amended by the Housing and Community Development Act of 1992, requires de economic opportunities generated by HUD financial assistance for housing (including public and Indian housing) and community development programs shall, to the greatest extend feasible, be given to low- and very low-income persons, particulary those who are recipients of government assistance for housing, and to busisnesses that provide economic opportunities for those persons.

# SUBCONTRACTOR'S LIST

| NAME | (MBE/WBE) | TRADE | ADDRESS | PHONE |
|---|---|---|---|---|
| 1. | | | | |
| 2. | | | | |
| 3. | | | | |
| 4. | | | | |
| 5. | | | | |
| 6. | | | | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |
| 10. | | | | |

_____
(Prime Contractor)

By: _____

Title: _____

Signature Date Printed Name

## SUGGESTED AFFIRMATIVE ACTION PLAN FOR UTILIZATION OF PROJECT AREA BUSINESSES

Number Of All Contracts Proposed: _____

Name Of Company: _____

Dollar Value Of All Contracts Proposed: _____

Project: _____

To The Greatest Extent Feasible, Contracts Will Be Awarded Through Negotiation Or Bid To Qualified Project Area Businesses.

Goal Of These Contracts For Project Area Businesses:

| PROPOSED TYPE OF CONTRACT | APPROX. COST | PROPOSED TYPE OF CONTRACT | APPROX. COST |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Outline The Program To Achieve These Goals For Economically And Socially Disadvantaged:

_____

_____

_____

_____

_____

(INSERT THIS DOCUMENT IN BID DOCUMENTS AND WITH BID) DATE: _____

Signature Date Printed Name

# SUBCONTRACTOR AFFIRMATIVE ACTION



Instructions when submitting a Subcontractor for approval under a Federally funded project, to ensure that Affirmative Action measures were taken to comply with the Equal Opportunity Executive Order 11246.

When selecting a Subcontractor, the General Contractor is to comply with the following:

1. Bid Form - line 6
2. General Conditions of the Contract for Construction (HUD-5370) Sections 37, 38 and 39
3. Supplementary General Conditions to Construction Contract and Specifications. All Sections on "Equal Employment Opportunity"

Date: _____ Project No.: _____

_____ _____

(Project Name) (Project Location)

Gentlemen:

In selecting the Subcontractor listed below, a minimum number of _____ similar subcontracting firms were contacted to submit a bid. The highlights of the Subcontractor selection will be listed below:

1. Scope of work (state kind of work, if for labor, or material, or both, and give specification reference).

_____

_____

_____

_____

_____

2. Date Bid advertised: _____

   a. Method of advertisement: _____

3. Last day Bids accepted: _____

Signature Date Printed Name

# SUBCONTRACTOR AFFIRMATIVE ACTION



4. List of firms submitting bid (Please note the minority or women owned firms):

_____

_____

_____

_____

a. Attach the bid form(s), and a copy of the bid security deposit(s) used, for each submitted bid.

5. In your opinion, was the above procedure a "Good faith effort" in selecting a minority or women owned subcontracting firms?

_____

_____

_____

_____

_____

Please submit this form and the requested forms along with the "Request for Acceptance of Subcontractor" for each Subcontractor you will be using.

_____
(Prime Contractor)

By: _____

Title: _____

Signature Date Printed Name

## DISCLOSURE OF OWNERSHIP

**INSTRUCTIONS: This form must be completed by the General/Prime Contractor, each Sub-contractor and Joint Venture Partnerships. Please provide copies of all Business Licenses, Articles of Incorporation, etc., and WBE, MBE Section 3, RBE Certifications with this form.**

Company Name _____ Address _____

City, State & Zip _____ Telephone _____ Fax _____

Primary Contact _____ Title _____

Email Address _____ Federal Tax Identification Number _____

City of Las Vegas Business License Number _____ State of Nevada Contractor's License Number, If any _____

### NAME AND TITLE OF PRINCIPALS OF YOUR COMPANY

*Please list additional principals on a separate sheet of paper.*

Name _____ Title _____ % Owned _____

Name _____ Title _____ % Owned _____

**SUPPLIER DIVERSITY STATEMENT**: Because the SNRHA receives federal funding, we **must** report to the government our supplier diversity efforts. This Information is used for coding and reporting purposes only and will not affect the ability of your firm to do business with our agency. **If you do not complete this area, we cannot add your firm to our eligible list**. **Resident (RBE) Minority (MBE**) or **Women-Owned (WBE) Business Enterprise** qualifies by virtue of **51%** or more of the ownership and active management by one or more of the following (check all that apply):

☐ Male Owned ☐ Public Held Corporation ☐ Government Agency ☐ Non Profit Org.

☐ Woman Owned ☐ Caucasian American ☐ Native American ☐ Hispanic American

☐ Asian/Pacific ☐ Hasidic Jew ☐ Asian/Indian ☐ SNRHA Resident

☐ African American ☐ Veteran ☐ Disabled ☐ W/MBE Certification# _____

☐ SEC 3/RBE Certification # _____ ☐ Other _____

**DEBARRED STATEMENT:** Has this firm or any principles ever been disbarred from providing any items or services by any local, state or federal governmental agency? __Y or __N If yes, please attach a full detailed explanation, including dates, circumstances and current status.

**DISCLOSURE STATEMENT:** Does/has this firm or any principal have/had any personal or professional relationship with any commissioner or officer of the SNRHA? __Y or __N If yes, please attach a full detailed explanation, including dates, circumstances and current status.

The undersigned hereby affirms that he/she is empowered to sign this form and requests that the above-noted firm be added to the SNRHA's list of firms eligible to do business with the SNRHA. The undersigned further affirms that, to the best of his/her knowledge, the above information is current and accurate, and acknowledges on behalf of the noted firm that the non-response of two (2) consecutive invitations to provide quotes/bids/proposals by the SNRHA will give the SNRHA the right to remove that firm from its list of eligible firms.

**INSURANCE:** ***Copy of insurance certificate must be provided immediately upon Notice of Award of contract, naming the SNRHA as the Certificate Holder and as an additional insured regarding General Liability.***

General Liability Insurance Policy # and Carrier: _____

Workman's Compensation Policy # and Carrier: _____

Automobile Liability Insurance Policy # and Carrier: _____

Signature _____ Date _____ Printed Name _____

**KEY PERSONNEL**

**INSTRUCTIONS:**

**LIST PERSONNEL ASSIGNED TO THIS CONTRACT:** Identify the individual(s) that will act as project manager and any other supervisory personnel who will work on project; attach brief resume for each:

| **Name:** | **Title** |
|---|---|
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |

Signature Date Printed Name

# STATEMENT OF BIDDER'S QUALIFICATIONS (GENERAL CONTRACTOR)



All questions must be answered and the data must be clear and comprehensive. This statement must be notarized. Attach additional pages if needed.

1. Name of bidder: _____
2. Name of Principals: _____
3. Names of authorized signatories: _____
4. Permanent main office address: _____

_____

5. When organized?: _____
6. Where incorporated?: _____
7. How many years have you been engaged in the contracting business under your present name?: _____

8. Previous names of companies in which the principals listed above (#2) have engaged in the contracting business:

_____

_____

_____

9. List all contracts on hand by name of contract and gross amount:

_____

_____

_____

_____

10. Have you ever defaulted on a contract? If so, where and why?:

_____

_____

_____

11. Have you ever refused to sign a contract at your original bid? If yes, explain:

_____

_____

_____

Signature Date Printed Name

# STATEMENT OF BIDDER'S QUALIFICATIONS (GENERAL CONTRACTOR)



12. Names, background, experience and current workload of the principal members of your personnel, including the officer.

| Name | Background | Years in Contracting | Current Workload |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

13. Furnish written evidence of amount and type of credit available.

14. Attach the most recent financial statement.

15. Will you, upon request, fill out a detailed Financial Statement and furnish any other information that may be required by the SNRHA? ☐ Yes ☐ No

16. The undersigned hereby authorizes and requests any person, firm or corporation to furnish any information requested by the SNRHA, in verification of the recitals comprising this Statement of Bidder's Qualifications.

Dated at _____ (place), this _____ (date) day of _____ (month), 20___ (year).

_____
(Name of Bidder)

State of (_____) By: _____

County of (_____) Title: _____

_____ being duly sworn, deposes and says he is _____
(Individual Signing Above) (Title)

of _____ (Name of Organization) and that the answers to the foregoing questions and all statements therein contained are true and correct.

Sworn before me this _____ day of _____, 20____.

My Commission Expires: _____
(Date)

Notary Public: _____

Signature Date Printed Name

# NON-COLLUSIVE AFFIDAVIT

State of ( **NEVADA** )

County of ( **CLARK** )

_____, being first duly sworn, deposes and says:

That he/she is _____the party making the foregoing proposal or bid, and that such proposal or bid is genuine and not collusive or; that said bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, to fix overhead, profit or cost element of said bid price, or that of any other bidder or to secure any advantage against the Housing Authority or any person interested in the proposed contract; and that all statements in said bid proposal or bid are true.

Signature of:

_____
(Bidder, if the bidder is an Individual)

_____
(Partner, if the bidder is a Partnership)

_____
(Officer, if the bidder is a Corporation)

Subscribed and sworn to before me this _____ day of _____, 20____.

My Commission Expires: _____
(Date)

_____
Notary Public

# Schedule of Amounts for Contract Payments

**U.S. Department of Housing and Urban Development**
Office of Public and Indian Housing

OMB Approval No. 2577-0157
(Exp. 1/1/2014)

No progress payments shall be made to the contractor unless a schedule of amounts for contract payments in accordance with the construction contract is received.



| Project Name and Location | Project Number |
|---|---|
| | |

Name, Address, and Zip Code of Contractor

| Nature of Contract | Contract Number |
|---|---|
| | |

| Approved for Contractor by | Title | Date (mm/dd/yyyy) |
|---|---|---|
| | | |

| Approved for Architect by | Title | Date (mm/dd/yyyy) |
|---|---|---|
| | | |

| Approved for Owner by | Title | Date (mm/dd/yyyy) |
|---|---|---|
| | | |

| Item No. (1) | Description of Item (2) | Quantity (3) | Unit of Measure (4) | Unit Price in Place (5) | Amount of Sub-Item (6) | Amount of Principal Item (7) |
|---|---|---|---|---|---|---|
| | | | | | | |
| **Total Amount of Contract or Carried Forward** | | | | | | $ |

To the best of my knowledge, all the information stated herein, as well as any information provided in the accompaniment herewith, is true and accurate.
**Warning:** HUD will prosecute false claims and statements. Conviction may result in criminal and/or civil penalties. (18 U.S.C. 1001, 1010, 1012; 31 U.S.C. 3729, 3802)

| Signature of authorized represenative | Date signed (mm/dd/yyyy) |
|---|---|
| | |

**Instructions for Preparation of form HUD-51000**

1. A separate breakdown is required for each project and prime contract instructions for preparation are given below.
   a. **Heading.** Enter all identifying information required for both forms.
   b. **Columns 1 and 2.** In column 1, enter the item numbers starting with No. 1, and in column 2 enter each principal division of work incorporated in the contract work.
      (1) **Master List.** The Master list contains the basic items into which any construction contract may be subdivided for the purpose of preparing the Construction Progress Schedule and the Periodical Estimates for Partial Payments. Only those items shall be selected which apply to the particular contract. To ensure uniformity, no change shall be made in the item numbers. Generally, about 25 to 40 major items appear in a contract.
      (2) **Items Subdivided.** In the Contractor's breakdown, against which all periodical estimates will be checked prior to payment, each major item must be subdivided into sub-items pertinent to the project involved and in agreement with the Contractor's intended basis for requesting monthly payments.
   c. **Column 3.** Enter the total quantity for each sub-item of each principal division of work listed in the breakdown.
   d. **Column 4.** Enter the appropriate unit of measure for each sub-item of work opposite the quantities described in column 3, such as “sq. ft.,” “cu. yd.,” “tons,” “lb.,” “lumber per M/BM,” “brickwork per M,” etc., applicable to the particular sub-item. Items shown on “lump sum” or equivalent basis will be paid for only on completion of the whole item and not on a percentage of completion basis.
   e. **Column 5.** Enter the unit price, in place, of each sub-item of work.
   f. **Column 6.** Enter the amount of each sub-item obtained by multiplying the quantities in column 3 by the corresponding unit prices in column 5.
   g. **Column 7.** Enter the amount of principal item only, obtained by adding the amounts of all sub-items of each principal division of work listed in column 6. Continue with the breakdown on form HUD-51000.
   h. The “Schedule of Amounts for Contract Payments” shall be signed and dated in the space provided at the bottom of each sheet of the form by the individual who prepared the breakdown for the Contractor.

2. The minimum number of copies required for each submission for approval is an original and two copies. When approved, one fully approved copy will be returned to the Contractor.

**Master List of Items**

| Item No. | Division of Work | Item No. | Division of Work | Item No. | Division of Work |
|---|---|---|---|---|---|
| 1 | Bond | 20 | Rough Carpentry | | **Site Improvements** |
| 2 | General Conditions \1 | 21 | Metal Bucks | 44 | Retaining Walls |
| 3 | Demolition & Clearing | 22 | Caulking | 45 | Storm Sewers |
| | | 23 | Weatherstripping | 46 | Sanitary Sewers |
| | **Structures** | 24 | Lath & Plastering-Drywall | 47 | Water Distribution System |
| 4 | General Excavation | 25 | Stucco | 48 | Gas Distribution System |
| 5 | Footing Excavation | 26 | Finish Carpentry | 49 | Electrical Distribution System |
| 6 | Backfill | 27 | Finish Hardware | 50 | Street & Yard Lighting |
| 7 | Foundation Piles & Caissons | 28 | Glass & Glazing | 51 | Fire & Police Alarm System |
| 8 | Concrete Foundations | 29 | Metal Doors | 52 | Fire Protection System |
| 9 | Concrete Superstructures | 30 | Metal Base & Trim | 53 | Street Work |
| 10 | Reinforcing Steel | 31 | Toilet Partitions | 54 | Yard Work |
| 11 | Waterproofing & Dampproofing | 32 | Floors | 55 | (Other) |
| 12 | Spandrel Waterproofing | 33 | Painting & Decorating | 56 | (Other) |
| 13 | Structural Steel | 34 | Screens | | |
| 14 | Masonry | 35 | Plumbing | | **Equipment** |
| 15 | Stonework | 36 | Heating | 57 | Shades & Drapery Rods |
| 16 | Miscellaneous & Ornamental Metal | 37 | Ventilating System | 58 | Ranges |
| 17 | Metal Windows | 38 | Electrical | 59 | Refrigerators |
| 18 | Roofing | 39 | Elevators | 60 | Kitchen Cabinets & Work Tables |
| 19 | Sheet Metal | 40 | Elevator Enclosures—Metal | 61 | Laundry Equipment |
| | | 41 | Incinerators—Masonry & Parts | 62 | (Other) |
| | | 42 | (Other) | | |
| | | 43 | (Other) | 63 | **Punch List** \2 |
| | | | | 64 | Lawns & Planting |

1 General Conditions should be 3% to 5% of contract amount.
2 Punch List should be approximately 1/2 of 1% or $30 per dwelling unit, whichever is greater.

# ALTERNATE BID GUARANTEE

At the time of Bid Submission the following could be submitted in lieu of the Bid Bond; (All amounts being 5% of the Bid price.)

1) A Certified check or bank draft made payable to the Southern Nevada Regional Housing Authority

2) A U. S. Government Bond in the amount made payable to the Southern Nevada Regional Housing Authority

**U.S. Department of Housing and Urban Development**

Office of Public and Indian Housing

# Instructions to Bidders for Contracts Public and Indian Housing Programs

# Instructions to Bidders for Contracts

Public and Indian Housing Programs

**Table of Contents**



## 1. Bid Preparation and Submission

(a) Bidders are expected to examine the specifications, drawings, all instructions, and, if applicable, the construction site (see also the contract clause entitled **Site Investigation and Conditions Affecting the Work** of the *General Conditions of the Contract for Construction*). Failure to do so will be at the bidders' risk.

(b) All bids must be submitted on the forms provided by the Public Housing Agency/Indian Housing Authority (PHA/IHA). Bidders shall furnish all the information required by the solicitation. Bids must be signed and the bidder's name typed or printed on the bid sheet and each continuation sheet which requires the entry of information by the bidder. Erasures or other changes must be initialed by the person signing the bid. Bids signed by an agent shall be accompanied by evidence of that agent's authority. (Bidders should retain a copy of their bid for their records.)

(c) Bidders must submit as part of their bid a completed form HUD-5369-A, "Representations, Certifications, and Other Statements of Bidders."

(d) All bid documents shall be sealed in an envelope which shall be clearly marked with the words "Bid Documents," the Invitation for Bids (IFB) number, any project or other identifying number, the bidder's name, and the date and time for receipt of bids.

(e) If this solicitation requires bidding on all items, failure to do so will disqualify the bid. If bidding on all items is not required, bidders should insert the words "No Bid" in the space provided for any item on which no price is submitted.

(f) Unless expressly authorized elsewhere in this solicitation, alternate bids will not be considered.

(g) Unless expressly authorized elsewhere in this solicitation, bids submitted by telegraph or facsimile (fax) machines will not be considered.

(h) If the proposed contract is for a Mutual Help project (as described in 24 CFR Part 905, Subpart E) that involves Mutual Help contributions of work, material, or equipment, supplemental information regarding the bid advertisement is provided as an attachment to this solicitation.

## 2. Explanations and Interpretations to Prospective Bidders

(a) Any prospective bidder desiring an explanation or interpretation of the solicitation, specifications, drawings, etc., must request it at least 7 days before the scheduled time for bid opening. Requests may be oral or written. Oral requests must be confirmed in writing. The only oral clarifications that will be provided will be those clearly related to solicitation procedures, i.e., not substantive technical information. No other oral explanation or interpretation will be provided. Any information given a prospective bidder concerning this solicitation will be furnished promptly to all other prospective bidders as a written amendment to the solicitation, if that information is necessary in submitting bids, or if the lack of it would be prejudicial to other prospective bidders.

(b) Any information obtained by, or provided to, a bidder other than by formal amendment to the solicitation shall not constitute a change to the solicitation.

## 3. Amendments to Invitations for Bids

(a) If this solicitation is amended, then all terms and conditions which are not modified remain unchanged.

(b) Bidders shall acknowledge receipt of any amendment to this solicitation (1) by signing and returning the amendment, (2) by identifying the amendment number and date on the bid form, or (3) by letter, telegram, or facsimile, if those methods are authorized in the solicitation. The PHA/IHA must receive acknowledgement by the time and at the place specified for receipt of bids. Bids which fail to acknowledge the bidder's receipt of any amendment will result in the rejection of the bid if the amendment(s) contained information which substantively changed the PHA's/IHA's requirements.

(c) Amendments will be on file in the offices of the PHA/IHA and the Architect at least 7 days before bid opening.

## 4. Responsibility of Prospective Contractor

(a) The PHA/IHA will award contracts only to responsible prospective contractors who have the ability to perform successfully under the terms and conditions of the proposed contract. In determining the responsibility of a bidder, the PHA/IHA will consider such matters as the bidder's:

(1) Integrity;

(2) Compliance with public policy;

(3) Record of past performance; and

(4) Financial and technical resources (including construction and technical equipment).

(b) Before a bid is considered for award, the bidder may be requested by the PHA/IHA to submit a statement or other documentation regarding any of the items in paragraph (a) above. Failure by the bidder to provide such additional information shall render the bidder nonresponsible and ineligible for award.

## 5. Late Submissions, Modifications, and Withdrawal of Bids

(a) Any bid received at the place designated in the solicitation after the exact time specified for receipt will not be considered unless it is received before award is made and it:

(1) Was sent by registered or certified mail not later than the fifth calendar day before the date specified for receipt of offers (e.g., an offer submitted in response to a solicitation requiring receipt of offers by the 20th of the month must have been mailed by the 15th);

(2) Was sent by mail, or if authorized by the solicitation, was sent by telegram or via facsimile, and it is determined by the PHA/IHA that the late receipt was due solely to mishandling by the PHA/IHA after receipt at the PHA/IHA; or

(3) Was sent by U.S. Postal Service Express Mail Next Day Service - Post Office to Addressee, not later than 5:00 p.m. at the place of mailing two working days prior to the date specified for receipt of proposals. The term "working days" excludes weekends and observed holidays.

(b) Any modification or withdrawal of a bid is subject to the same conditions as in paragraph (a) of this provision.

(c) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent either by registered or certified mail is the U.S. or Canadian Postal Service postmark both on the envelope or wrapper and on the original receipt from the U.S. or Canadian Postal Service. Both postmarks must show a legible date or the bid, modification, or withdrawal shall be processed as if mailed late. "Postmark" means a printed, stamped, or otherwise placed impression (exclusive of a postage meter machine impression) that is readily identifiable without further action as having been supplied and affixed by employees of the U.S. or Canadian Postal Service on the date of mailing. Therefore, bidders should request the postal clerk to place a hand cancellation bull's-eye postmark on both the receipt and the envelope or wrapper.

(d) The only acceptable evidence to establish the time of receipt at the PHA/IHA is the time/date stamp of PHA/IHA on the proposal wrapper or other documentary evidence of receipt maintained by the PHA/IHA.

(e) The only acceptable evidence to establish the date of mailing of a late bid, modification, or withdrawal sent by Express Mail Next Day Service-Post Office to Addressee is the date entered by the post office receiving clerk on the "Express Mail Next Day Service-Post Office to Addressee" label and the postmark on both the envelope or wrapper and on the original receipt from the U.S. Postal Service. "Postmark" has the same meaning as defined in paragraph (c) of this provision, excluding postmarks of the Canadian Postal Service. Therefore, bidders should request the postal clerk to place a legible hand cancellation bull's eye postmark on both the receipt and Failure by a bidder to acknowledge receipt of the envelope or wrapper.

(f) Notwithstanding paragraph (a) of this provision, a late modification of an otherwise successful bid that makes its terms more favorable to the PHA/IHA will be considered at any time it is received and may be accepted.

(g) Bids may be withdrawn by written notice, or if authorized by this solicitation, by telegram (including mailgram) or facsimile machine transmission received at any time before the exact time set for opening of bids; provided that written confirmation of telegraphic or facsimile withdrawals over the signature of the bidder is mailed and postmarked prior to the specified bid opening time. A bid may be withdrawn in person by a bidder or its authorized representative if, before the exact time set for opening of bids, the identity of the person requesting withdrawal is established and the person signs a receipt for the bid.

## 6. Bid Opening

All bids received by the date and time of receipt specified in the solicitation will be publicly opened and read. The time and place of opening will be as specified in the solicitation. Bidders and other interested persons may be present.

## 7. Service of Protest

(a) Definitions. As used in this provision:

"Interested party" means an actual or prospective bidder whose direct economic interest would be affected by the award of the contract.

"Protest" means a written objection by an interested party to this solicitation or to a proposed or actual award of a contract pursuant to this solicitation.

(b) Protests shall be served on the Contracting Officer by obtaining written and dated acknowledgement from —

Ms. Amparo Gamazo
Development/Modernization Director
SNRHA
340 North 11th Street, Suite # 150
Las Vegas, NV. 89101

[Contracting Officer designate the official or location where a protest may be served on the Contracting Officer]

(c) All protests shall be resolved in accordance with the PHA's/IHA's protest policy and procedures, copies of which are maintained at the PHA/IHA.

## 8. Contract Award

(a) The PHA/IHA will evaluate bids in response to this solicitation without discussions and will award a contract to the responsible bidder whose bid, conforming to the solicitation, will be most advantageous to the PHA/IHA considering only price and any price-related factors specified in the solicitation.

(b) If the apparent low bid received in response to this solicitation exceeds the PHA's/IHA's available funding for the proposed contract work, the PHA/IHA may either accept separately priced items (see 8(e) below) or use the following procedure to determine contract award. The PHA/IHA shall apply in turn to each bid (proceeding in order from the apparent low bid to the high bid) each of the separately priced bid deductible items, if any, in their priority order set forth in this solicitation. If upon the application of the first deductible item to all initial bids, a new low bid is within the PHA's/IHA's available funding, then award shall be made to that bidder. If no bid is within the available funding amount, then the PHA/IHA shall apply the second deductible item. The PHA/IHA shall continue this process until an evaluated low bid, if any, is within the PHA's/IHA's available funding. If upon the application of all deductibles, no bid is within the PHA's/IHA's available funding, or if the solicitation does not request separately priced deductibles, the PHA/IHA shall follow its written policy and procedures in making any award under this solicitation.

(c) In the case of tie low bids, award shall be made in accordance with the PHA's/IHA's written policy and procedures.

(d) The PHA/IHA may reject any and all bids, accept other than the lowest bid (e.g., the apparent low bid is unreasonably low), and waive informalities or minor irregularities in bids received, in accordance with the PHA's/IHA's written policy and procedures.

(e) Unless precluded elsewhere in the solicitation, the PHA/IHA may accept any item or combination of items bid.

(f) The PHA/IHA may reject any bid as nonresponsive if it is materially unbalanced as to the prices for the various items of work to be performed. A bid is materially unbalanced when it is based on prices significantly less than cost for some work and prices which are significantly overstated for other work.

(g) A written award shall be furnished to the successful bidder within the period for acceptance specified in the bid and shall result in a binding contract without further action by either party.

**9. Bid Guarantee** (applicable to construction and equipment contracts exceeding $25,000)

All bids must be accompanied by a negotiable bid guarantee which shall not be less than five percent (5%) of the amount of the bid. The bid guarantee may be a certified check, bank draft, U.S. Government Bonds at par value, or a bid bond secured by a surety company acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. In the case where the work under the contract will be performed on an Indian reservation area, the bid guarantee may also be an irrevocable Letter of Credit (see provision 10, Assurance of Completion, below). Certified checks and bank drafts must be made payable to the order of the PHA/IHA. The bid guarantee shall insure the execution of the contract and the furnishing of a method of assurance of completion by the successful bidder as required by the solicitation. Failure to submit a bid guarantee with the bid shall result in the rejection of the bid. Bid guarantees submitted by unsuccessful bidders will be returned as soon as practicable after bid opening.

**10. Assurance of Completion**

(a) Unless otherwise provided in State law, the successful bidder shall furnish an assurance of completion prior to the execution of any contract under this solicitation. This assurance may be [Contracting Officer check applicable items] —

[ ] (1) a performance and payment bond in a penal sum of 100 percent of the contract price; or, as may be required or permitted by State law;

[ ] (2) separate performance and payment bonds, each for 50 percent or more of the contract price;

[ ] (3) a 20 percent cash escrow;

[ ] (4) a 25 percent irrevocable letter of credit; or,

[ ] (5) an irrevocable letter of credit for 10 percent of the total contract price with a monitoring and disbursements agreement with the IHA (applicable only to contracts awarded by an IHA under the Indian Housing Program).

(b) Bonds must be obtained from guarantee or surety companies acceptable to the U.S. Government and authorized to do business in the state where the work is to be performed. Individual sureties will not be considered. U.S. Treasury Circular Number 570, published annually in the Federal Register, lists companies approved to act as sureties on bonds securing Government contracts, the maximum underwriting limits on each contract bonded, and the States in which the company is licensed to do business. Use of companies listed in this circular is mandatory. Copies of the circular may be downloaded on the U.S. Department of Treasury website **http://www.fms.treas.gov/c570/index.html**, or ordered for a minimum fee by contacting the Government Printing Office at (202) 512-2168.

(c) Each bond shall clearly state the rate of premium and the total amount of premium charged. The current power of attorney for the person who signs for the surety company must be attached to the bond. The effective date of the power of attorney shall not precede the date of the bond. The effective date of the bond shall be on or after the execution date of the contract.

(d) Failure by the successful bidder to obtain the required assurance of completion within the time specified, or within such extended period as the PHA/IHA may grant based upon reasons determined adequate by the PHA/IHA, shall render the bidder ineligible for award. The PHA/IHA may then either award the contract to the next lowest responsible bidder or solicit new bids. The PHA/IHA may retain the ineligible bidder's bid guarantee.

**11. Preconstruction Conference** (applicable to construction contracts)

After award of a contract under this solicitation and prior to the start of work, the successful bidder will be required to attend a preconstruction conference with representatives of the PHA/IHA and its architect/engineer, and other interested parties convened by the PHA/IHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract (e.g., Equal Employment Opportunity, Labor Standards). The PHA/IHA will provide the successful bidder with the date, time, and place of the conference.

**12. Indian Preference Requirements** (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

(a) HUD has determined that the contract awarded under this solicitation is subject to the requirements of section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e(b)). Section 7(b) requires that any contract or subcontract entered into for the benefit of Indians shall require that, to the greatest extent feasible

(1) Preferences and opportunities for training and employment (other than core crew positions; see paragraph (h) below) in connection with the administration of such contracts or subcontracts be given to qualified "Indians." The Act defines "Indians" to mean persons who are members of an Indian tribe and defines "Indian tribe" to mean any Indian tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians; and,

(2) Preference in the award of contracts or subcontracts in connection with the administration of contracts be given to Indian organizations and to Indian-owned economic enterprises, as defined in section 3 of the Indian Financing Act of 1974 (25 U.S.C. 1452). That Act defines "economic enterprise" to mean any Indian-owned commercial, industrial, or business activity established or organized for the purpose of profit, except that the Indian ownership must constitute not less than 51 percent of the enterprise; "Indian organization" to mean the governing body of any Indian tribe or entity established or recognized by such governing body; "Indian" to mean any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act; and Indian "tribe" to mean any Indian tribe, band, group, pueblo, or community including Native villages and Native groups (including

corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

(b) (1) The successful Contractor under this solicitation shall comply with the requirements of this provision in awarding all subcontracts under the contract and in providing training and employment opportunities.

(2) A finding by the IHA that the contractor, either (i) awarded a subcontract without using the procedure required by the IHA, (ii) falsely represented that subcontracts would be awarded to Indian enterprises or organizations; or, (iii) failed to comply with the contractor's employment and training preference bid statement shall be grounds for termination of the contract or for the assessment of penalties or other remedies.

(c) If specified elsewhere in this solicitation, the IHA may restrict the solicitation to qualified Indian-owned enterprises and Indian organizations. If two or more (or a greater number as specified elsewhere in the solicitation) qualified Indian-owned enterprises or organizations submit responsive bids, award shall be made to the qualified enterprise or organization with the lowest responsive bid. If fewer than the minimum required number of qualified Indian-owned enterprises or organizations submit responsive bids, the IHA shall reject all bids and readvertise the solicitation in accordance with paragraph (d) below.

(d) If the IHA prefers not to restrict the solicitation as described in paragraph (c) above, or if after having restricted a solicitation an insufficient number of qualified Indian enterprises or organizations submit bids, the IHA may advertise for bids from non-Indian as well as Indian-owned enterprises and Indian organizations. Award shall be made to the qualified Indian enterprise or organization with the lowest responsive bid if that bid is -

(1) Within the maximum HUD-approved budget amount established for the specific project or activity for which bids are being solicited; and

(2) No more than the percentage specified in 24 CFR 905.175(c) higher than the total bid price of the lowest responsive bid from any qualified bidder. If no responsive bid by a qualified Indian-owned economic enterprise or organization is within the stated range of the total bid price of the lowest responsive bid from any qualified enterprise, award shall be made to the bidder with the lowest bid.

(e) Bidders seeking to qualify for preference in contracting or subcontracting shall submit proof of Indian ownership with their bids. Proof of Indian ownership shall include but not be limited to:

(1) Certification by a tribe or other evidence that the bidder is an Indian. The IHA shall accept the certification of a tribe that an individual is a member.

(2) Evidence such as stock ownership, structure, management, control, financing and salary or profit sharing arrangements of the enterprise.

(f) (1) All bidders must submit with their bids a statement describing how they will provide Indian preference in the award of subcontracts. The specific requirements of that statement and the factors to used by the IHA in determining the statement's adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement shall be rejected as nonresponsive. The IHA may require that comparable statements be provided by subcontractors to the successful Contractor, and may require the Contractor to reject any bid or proposal by a subcontractor that fails to include the statement.

(2) Bidders and prospective subcontractors shall submit a certification (supported by credible evidence) to the IHA in any instance where the bidder or subcontractor believes it is infeasible to provide Indian preference in subcontracting. The acceptance or rejection by the IHA of the certification shall be final. Rejection shall disqualify the bid from further consideration.

(g) All bidders must submit with their bids a statement detailing their employment and training opportunities and their plans to provide preference to Indians in implementing the contract; and the number or percentage of Indians anticipated to be employed and trained. Comparable statements from all proposed subcontractors must be submitted. The criteria to be used by the IHA in determining the statement(s)'s adequacy are included as an attachment to this solicitation. Any bid that fails to include the required statement(s), or that includes a statement that does not meet minimum standards required by the IHA shall be rejected as nonresponsive.

(h) Core crew employees. A core crew employee is an individual who is a bona fide employee of the contractor at the time the bid is submitted; or an individual who was not employed by the bidder at the time the bid was submitted, but who is regularly employed by the bidder in a supervisory or other key skilled position when work is available. Bidders shall submit with their bids a list of all core crew employees.

(i) Preference in contracting, subcontracting, employment, and training shall apply not only on-site, on the reservation, or within the IHA's jurisdiction, but also to contracts with firms that operate outside these areas (e.g., employment in modular or manufactured housing construction facilities).

(j) Bidders should contact the IHA to determine if any additional local preference requirements are applicable to this solicitation.

(k) The IHA [ ] does [ ] does not [Contracting Officer check applicable box] maintain lists of Indian-owned economic enterprises and Indian organizations by specialty (e.g., plumbing, electrical, foundations), which are available to bidders to assist them in meeting their responsibility to provide preference in connection with the administration of contracts and subcontracts.

## GENERAL DECISION - No: NV120018
## Modification #: 1

## Dated: 02/10/12

## RESIDENTIAL

**Residential Wage Decision**: will apply to the Dwelling unit work to include but not limited to: Demolition, Building Concrete, Building Masonry, Misc Materials, Windows, Roofing, Elevated Walkways, Carpentry, Casework/Millwork, Sealants, Insulation, Gypsum Board, Paint, Plaster, Finish Carpentry, Hardboard Lap Siding, Doors, Elevators, Specialties, Flooring, Plumbing, HVAC, Electrical, Low Voltage, Window Coverings (Blinds), Equipment, Appliances Install.

Work on the **Non-Dwelling Buildings/Areas (Community Building, Laundry Room and Management Office)** is considered to be incidental to the **Residential Wage Decision** therefore, this wage will also apply to the Non-Dwelling Buildings/Areas as described above.

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# PLEASE NOTE THAT THE WAGE RATES MAY HAVE CHANGED SIGNIFICANTLY

The construction activity for this scope of work may require additional labor classifications not reflected in the approved wage decision, i.e., painter, plumber, etc. Therefore, enclosed is HUD-4230-A, Report of Additional Classification and Rate.

Per HUD Labor Relations Department, the Contractor is no longer required to contact three (3) contractors in the area who perform this work and request data on wages paid and number of employees. **The Contractor is still required, for this contract, to submit form HUD-4230-A, Report of Additional Classification and Rate, for approval of classifications not included in the approved wage determination.** Refer to Section 46 of the General Conditions for Construction Contracts (form HUD-5370).

Please forward the information requested above to HUD, *through* the Southern Nevada Regional Housing Authority, for final processing.

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General Decision Number: NV120018 02/10/2012  NV18

Superseded General Decision Number: NV20100018

State: Nevada

Construction Type: Residential

County: Clark County in Nevada.

RESIDENTIAL CONSTRUCTION PROJECTS (consisting of single family homes and apartments up to and including 4 stories).

| Modification Number | Publication Date |
|---|---|
| 0 | 01/06/2012 |
| 1 | 02/10/2012 |

CARP1780-001 07/01/2011

| | Rates | Fringes |
|---|---|---|
| Carpenter, Drywall Hanger Only | $ 37.76 | 11.85 |

ZONE PAY:
0 to 40 miles radius from intersection of Maryland Parkway and Charleston Blvd in Las Vegas: Free Zone

40 to 60 miles radius: $2.50 additional per hour

Over 60 miles radius: $4.25 additional per hour

Laughlin Area: $2.00 additional per hour

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ELEC0357-005 06/01/2011

| | Rates | Fringes |
|---|---|---|
| ELECTRICIAN | $ 38.99 | 17.07+3% |

ZONE PAY:

(A) The area bound by a 25 mile radius from the intersection of Main Street and Fremont Street in Las Vegas is hereby established a Free Zone.

(B) The area bound by a 25-55 mile radius from the intersection of Main and Fremont Street shall receive $2.50 per hour at a straight time rate for Zone Pay.

(C) The area outside of 55 miles radius from Main Street and Fremont Street shall receive $3.50 per hour at the straight time rate of Zone Pay.

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* ENGI0012-011 01/01/2012

| | Rates | Fringes |
|---|---|---|
| Operators: | | |
| (4) Roller, Base (Ride | | |

along).....$ 38.70 21.22
(6) Bulldozer.....$ 38.92 21.22
(8) Paver, Including
Asphalt.....$ 39.03 21.22

Add $2.00 per hour to wage rates:
20 miles to 40 miles from the City Hall of Las Vegas
Add $3.00 per hour to wage rates:
40 Miles to 60 Miles from the City Hall of Las Vegas
Add $3.50 per hour:
Over 60 Miles from the City Hall of Las Vegas

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LABO0872-006 07/01/2009

| | Rates | Fringes |
|---|---|---|
| LABORER | | |
| (1) Form Stripping | $ 25.31 | 17.63 |
| (2) Asphalt Dumpman | $ 25.52 | 17.63 |
| (3) Cement Mason Tender, Pipelayer | $ 25.62 | 17.63 |

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PLAS0797-002 07/01/2010

| | Rates | Fringes |
|---|---|---|
| CEMENT MASON/CONCRETE FINISHER | $ 34.17 | 12.11 |

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ROOF0162-003 08/01/2011

| | Rates | Fringes |
|---|---|---|
| ROOFER | $ 24.11 | 7.82 |

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SHEE0088-001 08/01/2011

| | Rates | Fringes |
|---|---|---|
| Sheet Metal Worker (HVAC Duct Only) | $ 22.54 | 12.76 |

| | |
|---|---|
| Zone 1: 0 to 30 miles | $0.00 |
| Zone 2: 30 to 50 miles | $2.50 |
| Zone 3: 50 to 100 miles (including Laughlin) | $3.50 |
| Zone 4: over 100 miles | $5.00 |

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* SUNV2007-017 09/14/2007

| | Rates | Fringes |
|---|---|---|
| CARPENTER, Excludes Drywall Hanging | $ 13.39 | 1.95 |
| LABORER: Common or General | $ 9.00 | 0.00 |
| LABORER: Landscape Only | $ 7.25 | 0.00 |
| OPERATOR: Backhoe | $ 13.96 | 0.00 |
| OPERATOR: Excavator | $ 14.30 | 0.00 |

OPERATOR: Forklift.....$ 15.80 0.60

OPERATOR: Grader/Blade.....$ 25.79 6.34

OPERATOR: Loader.....$ 20.81 5.12

OPERATOR: Scraper.....$ 21.53 7.33

OPERATOR: Trencher,
Excluding Hand Guided Trencher...$ 16.35 0.00

TRUCK DRIVER, Includes Dump
Truck.....$ 17.50 1.91

TRUCK DRIVER: Water Truck.....$ 17.36 1.79

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

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WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage

payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

## GENERAL DECISION - No: NV120034
## Modification #: 1

## Dated: 02/10/12

## HIGHWAY

**Highway Wage Decision** will apply to site related work to include but not limited to: Site Demolition, Site Excavation/Grading, Wet/Dry Utilities, Asphalt, Site Electrical, Concrete Curbs and Gutters, Concrete Sidewalk and Ramps, Concrete Driveways & Approach, Concrete Walkways, Concrete A/C Pads, Dumpsters Enclosures, Landscaping, Site Masonry, Trails Assemblies/Misc Metals, Site Fencing, Gates and Playgrounds.

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# PLEASE NOTE THAT THE WAGE RATES MAY HAVE CHANGED SIGNIFICANTLY

The construction activity for this scope of work may require additional labor classifications not reflected in the approved wage decision, i.e., painter, plumber, etc. Therefore, enclosed is HUD-4230-A, Report of Additional Classification and Rate.

Per HUD Labor Relations Department, the Contractor is no longer required to contact three (3) contractors in the area who perform this work and request data on wages paid and number of employees. **The Contractor is still required, for this contract, to submit form HUD-4230-A, Report of Additional Classification and Rate, for approval of classifications not included in the approved wage determination.** Refer to Section 46 of the General Conditions for Construction Contracts (form HUD-5370).

Please forward the information requested above to HUD, *through* the Southern Nevada Regional Housing Authority, for final processing.

General Decision Number: NV120034 01/06/2012  NV34

Superseded General Decision Number: NV20100064

State: Nevada

Construction Type: Highway

County: Clark County in Nevada.
EXCLUDES NEVADA TEST SITE (NTS), NATIONAL TEST AND TRAINING RANGE (NTTR) & TONOPAH TEST RANGE (TTR)

HIGHWAY CONSTRUCTION PROJECTS (excluding tunnels, building structures in rest area projects & railroad construction; bascule, suspension & spandrel arch bridges designed for commercial navigation, bridges involving marine construction; and other major bridges).

| Modification Number | Publication Date |
|---|---|
| 0 | 01/06/2012 |

SUNV2011-001 10/01/2010

| | Rates | Fringes |
|---|---|---|
| BRICKLAYER | $ 45.43 | |

BRICKLAYER ZONE PAY: add the applicable amounts per hour calculated based on radius of 50 miles from the City Hall in Las Vegas, Nevada.

Zone 1: 0 to 40 miles $0.00

Zone 2: over 40 to 50 miles $2.50

Zone 3: over 50 to 70 miles $5.00

Zone 4: over 70 miles $7.50

The area within the city limits of Boulder City and Primm, Nevada shall be considered free zones.

CARPENTER.....$ 48.95

CARPENTER ZONE PAY: add the applicable amounts per hour calculated from Maryland Parkway and Charleston Boulevard, Las Vegas.

Zone 1: 0 to 40 miles $0.00

Zone 2: over 40 to 60 miles $2.50

Zone 3: over 60 miles $4.25

Laughlin Area: $2.00

CEMENT MASON/CONCRETE FINISHER...$ 46.28

CEMENT MASON ZONE PAY: add the applicable amounts per hour calculated based on a radius from the City Hall of Las Vegas, Nevada:

Zone 1: 0 to 30 miles $0.00

Zone 2: over 30 to 50 miles $1.50

Zone 3: over 50 miles $3.25

ELECTRICIAN
Electrician
Neon Sign.....$ 45.52
Wireman.....$ 56.31
Line Construction
Groundman.....$ 35.33
Heavy Equipment Operator...$ 43.37
Lineman.....$ 52.82
ZONE PAY (Electrician Only does not apply to Line Construction): add the applicable amounts per hour calculated based on a radius from City Hall of Las Vegas.

Zone 1: 0 to 25 miles $0.00

Zone 2: over 25 to 55 miles $2.50

Zone 3: over 55 miles $3.50

FENCE ERECTOR.....$ 17.46

Hod Carrier (Brick Mason Tender).....$ 43.31

IRONWORKER.....$ 56.74

LABORER
Flagperson.....$ 41.44
Group 1.....$ 42.94
Group 2.....$ 43.15
Group 3.....$ 43.25
Group 4.....$ 43.34
Group 5.....$ 43.44
Highway Striper.....$ 30.81
Traffic Barrier Erector.....$ 42.94
LABORER ZONE PAY: add the applicable amounts per hour calculated based on a radius from the City Hall of Las Vegas, Nevada.

Zone 1: 0 to 30 miles: $0.00

Zone 2: over 30 to 50 miles: $1.50

Zone 3: over 50 miles: $3.25

Laughlin Area: $2.25

LABORER CLASSIFICATIONS:

Group 1

Construction Clean-Up; Dry packing of concrete & filling of

form bolt holes; File grader, street paving, airport runways; Guinea chaser; demolition or general construction; packing rod steel & pans; temporary water lines (portable type); Landscape gardener; Nurseryman; Tarman and mortarman, kettleman, potman and man applying asphalt, lay-kold creosote, fine, and similar type materials; Underground, including caisson bellowers; Scaffold Erector (under 14 ft.); Landscape Decorative rock Installer - (Ponds, Waterfalls, Etc.); Materials Handler; Tool Crib; Light Crib; Light Tool Repairman; Mechanical Stabilized Earth Wall; Certified Firewatch.

Group 2

Asphalt raker, ironer, spreader, luteman; Buggymobile man; Cement dumper (on one yard or larger mixers & handling bulk cement); Cesspool digger and installer; Chucktender; Concrete core cutter; Concrete curer, impervious membrane and oiler of all materials; Concrete saw man, excluding tractor type, cutting, scoring old or new concrete; Gas and oil wrapper, pot tender and form man; Making and caulking of all non-metallic pipe joints; Operators and tenders of pneumatic and electric tools, vibrating machines, hand propelled trenching machines, impact wrench multiplate and similar mechanical tools not separately classified herein; Operator of cement grinding machine; Riprap stonepaver; Roto-scraper; Sandblaster (pot tender); Scaler

Septic tank digger and installer (lead man); Tank scaler and cleaner; Tree climber, faller, chain saw operator, Pittsburgh chipper and similar type brush shredders.

Group 3

Cutting torch operator; Jackhammer and/or pavement breaker; Laying of all non-metallic pipe, including landscape sprinklers, sewer pipe, drain pipe and underground tile; Mudcutter; Concrete vibrator operator, all sizes; Rock slinger; Scaler (using bos'n chair or safety belt or power tools); Laying of all metallic and non-metallic pipe, p.v.c. and duct bank, including landscape sprinklers, sewer pipe, drain pipe and underground tile; Cement dumper (on one yard or larger mixers and handling bulk cement; Concrete core cutter; Concrete curer, impervious membrane and oiler of all materials; Decorative rock installer (ponds, waterfalls, etc.); Shotcrete/gunite.

Group 4

Cribber or shorer, lagging, sheeting, trench bracing, hand guided lagging hammer; Head rock slinger; Powderman-blaster; Sandblaster (nozzleman); Steel header-board man

Group 5

Driller (core, diamond or wagon); Joy driller model TW-M-2A, Gardner-Denver model DH 143 and similar type drills

MILLWRIGHT.....$ 49.95
MILLWRIGHT ZONE PAY: add the applicable amounts per hour calculated from Maryland Parkway and Charleson Boulevard, Las

Vegas

Zone 1: 0 to 20 miles $0.00

Zone 2: over 20 to 40 miles $1.50

Zone 3: over 40 miles $3.25

PAINTER.....$ 46.64

PILEDRIVERMAN.....$ 58.47

PLUMBER/PIPEFITTER.....$ 56.52
PLUMBER ZONE PAY: employees performing work on Public Works covered by this Agreement shall be entitled to the following wage rates for all hours worked calculated on an air mile radius from the Clark County Regional Justice Center.

Zone 1: 0 to 20 miles $0.00

Zone 2: over 20 to 45 miles $3.75

Zone 3: over 45 to 75 miles $7.50

Zone 4: over 75 miles $11.25

POWER EQUIPMENT OPERATOR:
(Cranes, Piledriving, &
Hoisting Equipment)
Group 1
Engineer Oiler.....$ 59.35
Forklift.....$ 55.67
Group 2
Truck Crane Oiler.....$ 59.35
Group 3
A-Frame or Winch Truck;
Ross Carrier (Jobsite).....$ 58.26
Group 4
Bridge-Type Unloader and
Turntable Operator;
Helicopter Hoist.....$ 58.40
Group 5
Hydraulic Boom Truck
(Pittman); Stinger Crane
(Austin-Western or
Similar Type); Tugger
Hoist (1 Drum).....$ 58.62
Group 6
Bridge Crane; Cretor
Craner; Hoist (Chicago
Boom and Similar Type);
Lift Mobile; Lift Slab
Machine (Vagtbor and
Similar Types); Material
Hoist/Manlift; Polar
Gantry Crane; Self
Climbing Scaffold (or
Similar Type); Shovel,

Backhoe, Dragline, Clamshell (Over 3/4 YD. and up to 5 CU. YDS.); Silent Piler; Tugger Hoist (2 Drum).....$ 58.73

Group 7
Pedestal Crane; Shovel, Backhoe, Dragline, Clamshell (over 5 CU. YDS.); Tower Crane Repairman; Tugger Hoist (3 Drum).....$ 58.85

Group 8
Crane Operator (up to and including 25 ton capacity).$ 60.82
Crawler Transporter; Derrick Barge (up to and including 25 ton capacity); Hoist, Stiff legs, Guy Derrick or Similar Type (up to and including 25 ton capacity); Shovel, Backhoe, Dragline, Clamshell (Over 7 CU YDS.).$ 59.02

Group 9
Crane Operator (over 25 tons up to and including 50 tons).....$ 60.82
Derrick Barge (over 25 tons up to and including 50 tons); Highline Cableway; Hoise, Stiff Legs, Guy Derrick or Similar Type (over 25 tons and up to and including 50 tons); K-Crane; Polar Crane; Self Erecting Tower Crane Maximum Lifting Capacity 10 tons. 1 ton Operator....$ 59.19

Group10
Crane (over 50 tons up to and including 100 tons); Mobile Tower Crane (over 50 tons up to and including 100 tons).....$ 62.24
Derrick Barge (over 50 tons up to and including 100 tons); Hoist, Stiff Legs, Guy Derrick or Similar Type (over 50 tons up to and including 100 tons).....$ 60.19

Group11
Crane (over 100 tons up to and including 200 tons); Mobile Tower Crane (over 100 tons up to and including 200 tons).....$ 62.74

Derrick Barge (over 100 tons up to and including 200 tons); Hoist Operator, Stiff Legs, Guy Derrick or Similar Type (over100 tons up to and including 200 tons).....$ 61.19
Tower Crane and Tower Gantry.....$ 63.19
Group12
Crane (over 200 tons up to and including 300 tons); Mobile Tower Crane (over 200 tons up to and including 300 tons).....$ 65.38
Derrick Barge (over 200 tons up to and including 300 tons); Hoist, Stiff Legs, Guy Derrick or Similar Type (over 200 tons up to and including 300 tons).....$ 62.19
Group13
Crane (over 300 tons); Mobile Tower Crane (over 300 tons).....$ 66.75
Derrick Barge (over 300 tons); Helicopter Pilot; Hoist Operator, Stiff Legs, Guy Derrick or Similar Type (over 300 tons).....$ 63.19

POWER EQUIPMENT OPERATOR:
(Group 1-8)
Equipment Greaser (Grease Truck).....$ 58.40
Equipment Greaser (Rack)....$ 56.91
Group 1.....$ 55.67
Group 2.....$ 56.62
Group 3.....$ 56.91
Group 4.....$ 58.40
Group 6.....$ 58.62
Group 8.....$ 58.73

ZONE PAY [ALL POWER EQUIPMENT OPERATORS INCLUDING CRANES, PILEDRIVING AND HOISTING EQUIPMENT]: add the applicable amounts per hour calculated from the City Hall of Las Vegas, Nevada.

Zone 1: 0 to 20 miles $0.00

Zone 2: over 20 to 40 miles $2.00

Zone 3: over 40 to 60 miles $3.00

Zone 4: over 60 miles $3.50

POWER EQUIPMENT OPERATOR CLASSIFICATIONS (GROUP 1-8):

Group 1

Bargeman; Blade Assistant; Brakeman; Compressor; Ditch Witch, with seat or similar type equipment; Elevator - inside; Engineer Oiler; Forklift (under 5 Tons); Generator; Generator, Pump or Compressor Plant; Pump; Signalman; Steam Cleaner/Pressure Washer; Switchman.

Group 2

Asphalt-Rubber Plant (Nurse Tank); Concrete Mixer - Skip type; Conveyor; Forklift (over 5 Tons); Hydrostatic Pump; Oiler Crusher (Asphalt or Concrete Plant); PJU Side Dump Jack; Rotary Drill Tender (Oilfield); Screening and Conveyor Machine (or similar types); Skiploader (wheel type up to Â¾ yd. without attachment); Tar Pot Fireman; Temporary Heating Plant; Trenching Machine Oiler.

Group 3

Asphalt-Rubber Blend; Bobcat or similar type (Skid Steer); Ford Ferguson (with dragtype attachments); Helicopter Radioman (ground); Stationary Pipe Wrapping and Cleaning Machine.

Group 4

Asphalt Plant Fireman; Backhoe (Mini-Max or similar type); Boring Machine; Boring System Electronic Tracking Locator; Boxman or Mixerman (Asphalt or Concrete); Chip Spreading Machine; Concrete Cleaning Decontamination Machine; Concrete Pump (small portable); Drilling Machine, Small Auger Types (Texoma Super Economatic, or similar types - Hughes 100 or 200, or similar types - drilling depth of 30' maximum); Guard Rail Post Driver; Highline Cableway Signalman; Horizontal Directional Drilling Machine; Hydra-Hammer-Aero Stomper; Power Concrete Curing Machine; Power Concrete Saw; Power - Driven Jumbo Form Setter; Power Sweeper; Rock Wheel Saw/Trencher; Roller (compacting); Screed (Asphalt or Concrete); Trenching Machine (up to 6 ft.); Vacuum or Muck Truck.

Group 6

Articulating Material Hauler; Asphalt Plant Engineer; Batch Plant; Bit Sharpener; Concrete Joint Machine (canal and similar type); Concrete Planer; Dandy Digger; Deck Engine; Derrickman (Oilfield type); Drilling Machine, Bucket or Auger Types (Calweld 100 Bucket or similar types - Watson 1000 Auger or similar types - Texoma 330, 500 or 600 Auger or similar types - drilling depth of 45' maximum); Drilling Machine (including water wells); Hydrographic Seeder Machine (straw, pulp or seed); Jackson Track Maintainer, or similar type; Kalamazoo Switch Tamper, or similar type; Machine Tool; Maginnis Internal Full Slab Vibrator; Mechanical Berm, curb or gutter (concrete or asphalt); Mechanical Finisher Operator (concrete, Clary-Johnson-Bidwell or similar); Pavement Breaker (truck mounted); Road Oil Mixing Machine; Roller (asphalt or finish); Rubber-Tired Earth Moving Equipment (single engine, up to and  including 25 yds. struck); Self-Propelled Tar Pipelining Machine; Skiploader (crawler and wheel type, over Â¾

yd. and up to and including 1Â½ yds.); Slip Form Pump (power driven hydraulic lifting device for concrete forms); Tractor - Bulldozer, Tamper-Scraper (single engine, up to 100 h.p. flywheel and similar types, up to and including D-5 and similar types); Tugger Hoist (1 drum); Ultra High Pressure Waterjet Cutting Tool System; Vacuum Blasting Machine.

Group 8

Asphalt or Concrete Spreading (Tamping or Finishing); Asphalt Paving Machine (Barber Greene or similar type); Asphalt-Rubber Distributor; Backhoe (up to and including Â¾ yd.); Cast in Place Pipe Laying Machine; Combination Mixer and Compressor (Gunite Work); Compactor - self propelled; Concrete Mixer - Paving; Crushing Plant (Non Portable); Drill Doctor; Drilling Machine, Bucket or Auger Types (Calweld 150 Bucket or similar types - Watson 1500, 2000, 2500 Auger or similar types - Texoma 700, 800 Auger or similar types - drilling depth of 60' maximum); Elevating Grader; Grade Checker; Gradall; Grouting Machine; Heavy Duty Repairman; Heavy Equipment Robotics; Kalamazoo Balliste Regulator or similar type Kolman Belt Loader and similar type; Le Tourneau Blob Compactor or similar type; Loader (Athey, Euclid, Sierra and similar types); Master Environmental Maintenance Mechanic; Mobark Chipper or similar types; Ozzie Padder or similar types; PC 490 Slot Saw; Pneumatic Concrete Placing Machine (Hackley-Presswell or similar type); Portable Crushing Plant; Pumpcrete Gun; Rock Drill or similar types; Rotary Drill (excluding Caison type); Rubber-Tired Earth Moving Equipment (single engine, Caterpillar, Euclid, Athey Wagon, and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-Tired Earth Moving Equipment (multiple engine - up to and including 25 yds. struck); Rubber-Tired Scraper (self-loading paddle wheel type - John Deere, 1040 and similar single unit); Self-Propelled Curb and Gutter Machine; Shuttle Buggy; Skiploader (crawler and wheel type over 1Â½ yds. up to and including 6Â½ yds.); Soil Remediation Plant (C.M.I. Enviro Tech Thermal or Similar Types); Surface Heaters and Planer; Tractor Compressor Drill Combination; Tractor (any type larger than D-5 - 100 flywheel h.p. and over, or similar - Bulldozer, Tamper, Scraper and Push Tractor, single engine); Tractor (boom attachments); Traveling Pipe Wrapping, Cleaning and Bending Machine; Trenching Machine (over 6 ft. depth capacity, manufacturer's rating); Trenching Machine with Road Miner Attachment (over 6 ft. depth capacity, manufacturer's rating); Ultra High Pressure Waterjet Cutting Tool System Mechanic; Water Pull (compaction).

POWER EQUIPMENT OPERATOR:
(Groups 10 to 25)

| | |
|---|---|
| Group 10 | $ 58.85 |
| Group 11 | $ 59.95 |
| Group 12 | $ 59.02 |
| Group 13 | $ 59.12 |
| Group 14 | $ 59.15 |
| Group 15 | $ 59.23 |
| Group 16 | $ 59.35 |
| Group 17 | $ 59.52 |
| Group 18 | $ 59.62 |
| Group 19 | $ 59.73 |

Group 20.....$ 59.85
Group 21.....$ 60.02
Group 22.....$ 60.12
Group 23.....$ 60.23
Group 24.....$ 60.35
Group 25.....$ 60.52

POWER EQUIPMENT OPERATOR CLASSIFICATIONS (GROUP 10-25):

Group 10

Drilling Machine, Bucket or Auger Types (Calweld 200 B Bucket or similar types - Watson 3000 or 5000 Auger or similar types - Texoma 900 Auger or similar types - drilling depth of 105' maximum); Dual Drum Mixer; Monorail Locomotive (diesel, gas or electric); Motor Patrol - Blade (single engine); Multiple Engine Tractor (Euclid and similar type - except Quad 9 Cat.); Pneumatic Pipe Ramming Tool and similar types; Pre-Stressed Wrapping Machine (2 Operators required); Rubber-Tired Earth Moving Equipment (single engine, over 50 yds. struck); Rubber-Tired Earth Moving Equipment (multiple engine, Euclid, Caterpillar and similar - over 25 yds. and up to 50 yds. struck); Tower Crane Repairman; Tractor Loader (crawler and wheel-type over 6Â½ yds.); Woods Mixer (and similar Pugmill equipment).

Group 11

Dynamic Compactor LDC350 (or similar types).

Group 12

Auto Grader; Automatic Slip Form; Drilling Machine, Bucket or Auger Types (Calweld, Auger 200 CA or similar types - Watson, Auger 6000 or similar types- Hughes Super Duty, Auger 200 or similar types - drilling depth of 175' maximum); Hoe Ram or similar with Compressor; Mass Excavator - Less than 750 cu. yds.; Mechanical Finishing Machine; Mobile Form Traveler; Motor Patrol (multi-engine); Pipe Mobile Machine; Rubber-Tired Earth Moving Equipment (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Rubber-Tired Self-Loading Scraper (paddle-wheel-Auger type self-loading - 2 or more units); Vermeer Rock Trencher (or similar type).

Group 13

Rubber-Tired Earth Moving Equipment, equipment with the Push-Pull System (single engine, up to and including 25 yds. struck).

Group 14

Canal Liner (not less than 4 employees - Oiler, Mechanic, Grade Checker required); Canal Trimmer; Remote Controlled Earth Moving Equipment (no one shall operate more than two pieces of earth moving equipment at one time - $1.00 per hour additional to base rate); Wheel Excavator (over 750 cu. yds. per hour).

Group 15

Rubber-Tired Earth Moving Equipment, equipment with the Push-Pull System (single engine, Caterpillar, Euclid, Athey Wagon, and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-Tired Earth Moving Equipment, equipment with the Push-Pull System (multiple engine - up to and including 25 yds. struck).

Group 16

Rubber-Tired Earth Moving Equipment, equipment with the Push-Pull System (single engine, over 50 yds. struck); Rubber-Tired Earth Moving Equipment, equipment with the Push-Pull System (multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck).

Group 17

Rubber-Tired Earth Moving Equipment, equipment with the Push-Pull System (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck); Tandem Tractor (crawler type tractors in tandem - Quad 9 and similar type).

Group 18

Rubber-Tired Earth Moving Equipment, in Tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - single engine, up to and including 25 yds. struck).

Group 19

Rotex Concrete Belt (or similar types); Rubber-Tired Earth Moving Equipment, in Tandem (scrapers, belly dumps, and similar types in any combination, including compaction units - single engine, Caterpillar, Euclid, Athey Wagon, and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-Tired Earth Moving Equipment, in Tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, up to and including 25 yds. struck).

Group 20

Rubber-Tired Earth Moving Equipment, in Tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - single engine, over 50 yds. struck); Rubber-Tired Earth Moving Equipment, in Tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar, over 25 yds. and up to 50 yds. struck).

Group 21

Rubber-Tired Earth Moving Equipment, in Tandem (scrapers, belly dumps, and similar types in any combination, excluding compaction units - multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck).

Group 22

Rubber-Tired Earth Moving Equipment, equipment with the Tandem Push-Pull System (single engine, up to and including 25 yds. struck)

Group 23

Rubber-Tired Earth Moving Equipment, equipment with the Tandem Push-Pull System (single engine, Caterpillar, Euclid, Athey Wagon, and similar types with any and all attachments over 25 yds. and up to and including 50 cu. yds. struck); Rubber-Tired Earth Moving Equipment, equipment with the Tandem Push-Pull System (multiple engine, up to and including 25 yds. struck).

Group 24

Rubber-Tired Earth Moving Equipment, equipment with the Tandem Push-Pull System (single engine, over 50 yds. struck); Rubber-Tired Earth Moving Equipment, equipment with the Tandem Push-Pull System (multiple engine, Euclid, Caterpillar and similar, over 25 yds. & up to 50 yds. struck).

Group 25

Concrete Pump - truck mounted (Oiler required when boom over 105' or 36 meters); Rubber-Tired Earth Moving Equipment, equipment with the Tandem Push-Pull System (multiple engine, Euclid, Caterpillar and similar type, over 50 cu. yds. struck).

TRUCK DRIVER

| | |
|---|---|
| Group 1 | $ 46.13 |
| Group 2 | $ 46.23 |
| Group 3 | $ 46.44 |
| Group 4 | $ 46.62 |
| Group 5 | $ 46.82 |
| Group 6 | $ 47.12 |

TRUCK DRIVER ZONE PAY: add the applicable amounts per hour calculated from Las Vegas City Hall.

| | |
|---|---|
| Zone 1: 0 to 30 miles | $0.00 |
| Zone 2: over 30 to 50 miles | $1.50 |
| Zone 3: over 50 to 70 miles | $2.50 |
| Zone 4: over 70 miles | $3.50 |

TRUCK DRIVER CLASSIFICATIONS:

Group 1

Drivers of dump trucks (less than 12 yds. water level), drivers of trucks (legal payload capacity less than 15 tons), water and fuel truck drivers under 2,500 gal, pickup driver, service station attendant, teamster equipment, warehousemen, drivers of busses used for transportation of up to 16 passengers.

Group 2

Drivers of dump trucks (12 yds but less than 16 yds water level), drivers of trucks (legal payload capacity between 15 and 20 tons), drivers of transit mix trucks (under 3 yds), dumpcrete trucks (less than 6 Â½ yds water level), gas and oil pipeline working truck drivers, including winch truck and all sizes of trucks, water and fuel truck drivers (2,500 gal to 4,000 gal), truck greaser, drivers of busses (used for transportation or more than 16 passengers), warehouse clerk.

Group 3

Drivers of dump trucks (16 yds up to and including 22 yds water level), drivers of trucks (legal payload cap. 20 tons but less than 25 tons), drivers of dumpster trucks, drivers of transit-mix trucks (3 yds but less than 6 yds), dumpcrete trucks (6 Â½ yds water level and over), fork lift driver, Ross Carrier driver, highway water and fuel drivers (4,001 gallon but less than 6,000 gallon), stock room clerk, tireman.

Group 4

Drivers of transit-mix trucks (6 yds or more), drivers of dump trucks (over 22 yds. water level), drivers of trucks (legal payload capacity 25 tons and over), drivers of fuel and water trucks (6,000 gallon and over).

Group 5

Drivers of trucks and trailers in combination (six axles or more).

Group 6

All Off-road Equipment, Truck Repairman, Transport Drivers and Drivers of Road Oil Spreader Trucks, DW 10 and DW 20 Euclid-type equipment Letourneau pulls, Terra Cobras and similar types of equipment, also PB and similar type trucks when performing work within the Teamster jurisdiction, regardless of types of attachment, including power units pulling off-highway belly dumps in tandem.

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

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The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the

cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is union or non-union.

Union Identifiers

An identifier enclosed in dotted lines beginning with characters other than "SU" denotes that the union classification and rate have found to be prevailing for that classification. Example: PLUM0198-005 07/01/2011. The first four letters , PLUM, indicate the international union and the four-digit number, 0198, that follows indicates the local union number or district council number where applicable , i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2011, following these characters is the effective date of the most current negotiated rate/collective bargaining agreement which would be July 1, 2011 in the above example.

Union prevailing wage rates will be updated to reflect any changes in the collective bargaining agreements governing the rate.

Non-Union Identifiers

Classifications listed under an "SU" identifier were derived from survey data by computing average rates and are not union rates; however, the data used in computing these rates may include both union and non-union data. Example: SULA2004-007 5/13/2010. SU indicates the rates are not union rates, LA indicates the State of Louisiana; 2004 is the year of the survey; and 007 is an internal number used in producing the wage determination. A 1993 or later date, 5/13/2010, indicates the classifications and rates under that identifier were issued as a General Wage Determination on that date.

Survey wage rates will remain in effect and will not change until a new survey is conducted.

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WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial

contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

# U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
# REPORT OF ADDITIONAL CLASSIFICATION AND RATE

**HUD FORM 4230A**

OMB Approval Number 2501-0011
(Exp. 01/31/2010)

**1. FROM** (*name and address of requesting agency)*

**2. PROJECT NAME AND NUMBER**

**3. LOCATION OF PROJECT** (City, County and State)

**4. BRIEF DESCRIPTION OF PROJECT**

**5. CHARACTER OF CONSTRUCTION**

☐ **Building** ☐ **Residential**
☐ **Heavy** ☐ **Other (specify)**
☐ **Highway**

**6. WAGE DECISION NO.** (include modification number, if any)

☐ **COPY ATTACHED**

**7. WAGE DECISION EFFECTIVE DATE**

| **8. WORK CLASSIFICATION(S)** | **HOURLY WAGE RATES** | |
|---|---|---|
| | **BASIC WAGE** | **FRINGE BENEFIT(S) (if any)** |
| | | |

**9. PRIME CONTRACTOR** (name, address)

**10. SUBCONTRACTOR/EMPLOYER, IF APPLICABLE** (name, address)

## Check All That Apply:

☐ The work to be performed by the additional classification(s) is not performed by a classification in the applicable wage decision.

☐ The proposed classification is utilized in the area by the construction industry.

☐ The proposed wage rate(s), including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage decision.

☐ The interested parties, including the employees or their authorized representatives, agree on the classification(s) and wage rate(s).

☐ Supporting documentation attached, including applicable wage decision.

## Check One:

☐ **Approved, meets all criteria. DOL confirmation requested.**

☐ **One or more classifications fail to meet all criteria as explained in agency referral. DOL decision requested.**

**Agency Representative**
*(Typed name and signature)*

*Date*

*Phone Number*

**FOR HUD USE ONLY**
**LR2000:**

**Log in:**

**Log out:**

HUD-4230A (8-03) PREVIOUS EDITION IS OBSOLETE

| Report of Additional Classification and Wage Rate | U.S. Department of Housing and Urban Development<br>Office of Labor Relations | OMB Approval No. 2501-0011<br>(Exp. 01/31/2010) |
|---|---|---|

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining data needed, and completing and reviewing the collection of information. The information is considered non-sensitive and does not require special protection. This information is required to obtain benefits. This agency may not collect this information, and you are not required to complete this form, unless it displays a currently valid OMB control number.

Employers engaged on HUD-assisted construction projects subject to Davis-Bacon wage requirements must pay no less than the wages determined to be prevailing by the Secretary of Labor to all laborers and mechanics engaged on the construction work. On occasion, the applicable Davis-Bacon wage decision does not contain all of the work classifications and wage rates needed to complete the construction work. This information collection facilitates the addition of needed work classifications and wage rates for the construction work involved. This form is used by HUD and local agencies administering HUD programs to report employer request(s) for additional classification and wage rates so that an appropriate wage rate can be approved by the Department of Labor for the construction work. This information collection is required by Department of Labor regulations at 29 CFR 5.5. While no assurances of confidentiality are pledged to respondents, HUD generally discloses these data only in response to a Freedom of Information request.

Instructions

General:

Contractors/Employers: Do not need to complete this form. Submit a written, signed request to the responsible contracting agency naming the work classifications and the wage rates, including any fringe benefits, that are proposed.

Local Agency Staff: Complete items 2 through 10. Submit one copy of this form to the responsible HUD Labor Relations Office with a copy of the applicable Davis-Bacon wage decision and the written request from the employer naming the work classifications and wage rates that are proposed. (The employer's request must be made in writing and must be signed.)

1. For HUD or State CDBG Office use. Enter the name and address of HUD Office (or State CDBG office) submitting the report and to which the DOL reply should be sent.
2. Enter the name and number of the project or contract involved.
3. Enter the location of the project involved: city, county and state.
4. Describe the construction involved, e.g., new construction or rehabilitation, number and type of buildings, number of stories, number of units (as applicable). For example, New construction: 3 – 4-story buildings; 120 units.
5. Enter the character of construction as defined by DOL for Davis-Bacon prevailing wage rate purposes.
6. Enter the number of the Davis-Bacon wage decision applicable to the construction work. Include the number of wage decision modifications (if any) applicable to the work.
7. Enter the effective date of the wage decision for the project. (See DOL regulations at 29 CFR 1.6.)
8. Enter the work classifications and corresponding hourly basic wage rates and fringe benefit rates (if any) requested.
9. Self-explanatory.
10. If the requesting employer is not the prime contractor, enter the name and address of the subcontractor/employer making the request.

Remainder of Form: HUD Labor Relations/State CDBG use.

HUD Labor Relations/State CDBG Staff: Evaluate the employer's request against the criteria for approval (see DOL Regulations, 29 CFR Part 5, and related contract labor standards provisions). The criteria are reflected in "checklist" form to ensure that each factor is considered and to ensure that supporting documentation, including a copy of the applicable wage decision, is attached. Check the box next to each criterion that is met; do not check the box next to any criterion that is not met.

If the request meets all criteria, check the appropriate box, enter the name and telephone number of the HUD/State CDBG agency representative, and sign and date the form. Submit one copy of the completed form to the DOL with a copy of the applicable Davis-Bacon wage decision and the written request from the employer involved.

If the request fails to pass all criteria, check the appropriate box, enter agency contact information, and sign and date the form. Submit one copy of the completed form to the DOL with a copy of the applicable Davis-Bacon wage decision, the written request from the employer involved, *and* a cover letter explaining how the employer's request failed to meet one or more of the criteria.

Submission of Report

Completed forms shall be sent to: Branch of Construction Wage Determinations, U.S. Department of Labor, 200 Constitution Avenue, NW, Room S-3014, Washington, DC 20210.

# General Conditions for Construction Contracts - Public Housing Programs

**U.S. Department of Housing and Urban Development**
Office of Public and Indian Housing
OMB Approval No. 2577-0157 (exp. 01/31/2014)

**Applicability. This form is applicable to any construction/development contract greater than $100,000.**

This form includes those clauses required by OMB's common rule on grantee procurement, implemented at HUD in 24 CFR 85.36, and those requirements set forth in Section 3 of the Housing and Urban Development Act of 1968 and its amendment by the Housing and Community Development Act of 1992, implemented by HUD at 24 CFR Part 135. The form is required for construction contracts awarded by Public Housing Agencies (PHAs).
The form is used by Housing Authorities in solicitations to provide necessary contract clauses. If the form were not used, HAs would be unable to enforce their contracts.
Public reporting burden for this collection of information is estimated to average 1.0 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Responses to the collection of information are required to obtain a benefit or to retain a benefit.
The information requested does not lend itself to confidentiality.
HUD may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB number.

## Table of Contents

**1. Definitions**

(a) "Architect" means the person or other entity engaged by the PHA to perform architectural, engineering, design, and other services related to the work as provided for in the contract. When a PHA uses an engineer to act in this capacity, the terms "architect" and "engineer" shall be synonymous. The Architect shall serve as a technical representative of the Contracting Officer. The Architect's authority is as set forth elsewhere in this contract.

(b) "Contract" means the contract entered into between the PHA and the Contractor. It includes the forms of Bid, the Bid Bond, the Performance and Payment Bond or Bonds or other assurance of completion, the Certifications, Representations, and Other Statements of Bidders (form HUD-5370), these General Conditions of the Contract for Construction (form HUD-5370), the applicable wage rate determinations from the U.S. Department of Labor, any special conditions included elsewhere in the contract, the specifications, and drawings. It includes all formal changes to any of those documents by addendum, change order, or other modification.

(c) "Contracting Officer" means the person delegated the authority by the PHA to enter into, administer, and/or terminate this contract and designated as such in writing to the Contractor. The term includes any successor Contracting Officer and any duly authorized representative of the Contracting Officer also designated in writing. The Contracting Officer shall be deemed the authorized agent of the PHA in all dealings with the Contractor.

(d) "Contractor" means the person or other entity entering into the contract with the PHA to perform all of the work required under the contract.

(e) "Drawings" means the drawings enumerated in the schedule of drawings contained in the Specifications and as described in the contract clause entitled Specifications and Drawings for Construction herein.

(f) "HUD" means the United States of America acting through the Department of Housing and Urban Development including the Secretary, or any other person designated to act on its behalf. HUD has agreed, subject to the provisions of an Annual Contributions Contract (ACC), to provide financial assistance to the PHA, which includes assistance in financing the work to be performed under this contract. As defined elsewhere in these General Conditions or the contract documents, the determination of HUD may be required to authorize changes in the work or for release of funds to the PHA for payment to the Contractor. Notwithstanding HUD's role, nothing in this contract shall be construed to create any contractual relationship between the Contractor and HUD.

(g) "Project" means the entire project, whether construction or rehabilitation, the work for which is provided for in whole or in part under this contract.

(h) "PHA" means the Public Housing Agency organized under applicable state laws which is a party to this contract.

(j) "Specifications" means the written description of the technical requirements for construction and includes the criteria and tests for determining whether the requirements are met.

(l) "Work" means materials, workmanship, and manufacture and fabrication of components.

**2. Contractor's Responsibility for Work**

(a) The Contractor shall furnish all necessary labor, materials, tools, equipment, and transportation necessary for performance of the work. The Contractor shall also furnish all necessary water, heat, light, and power not made available to the Contractor by the PHA pursuant to the clause entitled Availability and Use of Utility Services herein.

(b) The Contractor shall perform on the site, and with its own organization, work equivalent to at least [ ] (12 percent unless otherwise indicated) of the total amount of work to be performed under the order. This percentage may be reduced by a supplemental agreement to this order if, during performing the work, the Contractor requests a reduction and the Contracting Officer determines that the reduction would be to the advantage of the PHA.

(c) At all times during performance of this contract and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the work site a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.

(d) The Contractor shall be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence, and shall take proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall hold and save the PHA, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.

(e) The Contractor shall lay out the work from base lines and bench marks indicated on the drawings and be responsible for all lines, levels, and measurements of all work executed under the contract. The Contractor shall verify the figures before laying out the work and will be held responsible for any error resulting from its failure to do so.

(f) The Contractor shall confine all operations (including storage of materials) on PHA premises to areas authorized or approved by the Contracting Officer.

(g) The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. After completing the work and before final inspection, the Contractor shall (1) remove from the premises all scaffolding, equipment, tools, and materials (including rejected materials) that are not the property of the PHA and all rubbish caused by its work; (2) leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer; (3) perform all specified tests; and, (4) deliver the installation in complete and operating condition.

(h) The Contractor's responsibility will terminate when all work has been completed, the final inspection made, and the work accepted by the Contracting Officer. The Contractor will then be released from further obligation except as required by the warranties specified elsewhere in the contract.

**3. Architect's Duties, Responsibilities, and Authority**

(a) The Architect for this contract, and any successor, shall be designated in writing by the Contracting Officer.

(b) The Architect shall serve as the Contracting Officer's technical representative with respect to architectural, engineering, and design matters related to the work performed under the contract. The Architect may provide direction on contract performance. Such direction shall be within the scope of the contract and may not be of a nature which: (1) institutes additional work outside the scope of the contract; (2) constitutes a change as defined in the Changes clause herein; (3) causes an increase or decrease in the cost of the contract; (4) alters the Construction Progress Schedule; or (5) changes any of the other express terms or conditions of the contract.

(c) The Architect's duties and responsibilities may include but shall not be limited to:

(1) Making periodic visits to the work site, and on the basis of his/her on-site inspections, issuing written reports to the PHA which shall include all observed deficiencies. The Architect shall file a copy of the report with the Contractor's designated representative at the site;

(2) Making modifications in drawings and technical specifications and assisting the Contracting Officer in the preparation of change orders and other contract modifications for issuance by the Contracting Officer;

(3) Reviewing and making recommendations with respect to - (i) the Contractor's construction progress schedules; (ii) the Contractor's shop and detailed drawings; (iii) the machinery, mechanical and other equipment and materials or other articles proposed for use by the Contractor; and, (iv) the Contractor's price breakdown and progress payment estimates; and,

(4) Assisting in inspections, signing Certificates of Completion, and making recommendations with respect to acceptance of work completed under the contract.

**4. Other Contracts**

The PHA may undertake or award other contracts for additional work at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with PHA employees and shall carefully adapt scheduling and performing the work under this contract to accommodate the additional work, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act that will interfere with the performance of work by any other contractor or by PHA employees

**Construction Requirements**

**5. Pre-construction Conference and Notice to Proceed**

(a) Within ten calendar days of contract execution, and prior to the commencement of work, the Contractor shall attend a preconstruction conference with representatives of the PHA, its Architect, and other interested parties convened by the PHA. The conference will serve to acquaint the participants with the general plan of the construction operation and all other requirements of the contract. The PHA will provide the Contractor with the date, time, and place of the conference.

(b) The contractor shall begin work upon receipt of a written Notice to Proceed from the Contracting Officer or designee. The Contractor shall not begin work prior to receiving such notice.

**6. Construction Progress Schedule**

(a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring labor, materials, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion by any given date during the period. If the Contractor fails to submit a schedule within the time prescribed, the Contracting Officer may withhold approval of progress payments or take other remedies under the contract until the Contractor submits the required schedule.

(b) The Contractor shall enter the actual progress on the chart as required by the Contracting Officer, and immediately deliver three copies of the annotated schedule to the Contracting Officer. If the Contracting Officer determines, upon the basis of inspection conducted pursuant to the clause entitled Inspection and Acceptance of Construction, herein that the Contractor is not meeting the approved schedule, the Contractor shall take steps necessary to improve its progress, including those that may be required by the Contracting Officer, without additional cost to the PHA. In this circumstance, the Contracting Officer may require the Contractor to increase the number of shifts, overtime operations, days of work, and/or the amount of construction plant, and to submit for approval any supplementary schedule or schedules in chart form as the Contracting Officer deems necessary to demonstrate how the approved rate of progress will be regained.

(c) Failure of the Contractor to comply with the requirements of the Contracting Officer under this clause shall be grounds for a determination by the Contracting Officer that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the Contract. Upon making this determination, the Contracting Officer may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the Default clause of this contract.

**7. Site Investigation and Conditions Affecting the Work**

(a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to, (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads;(3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is

reasonably ascertainable from an inspection of the site, including all exploratory work done by the PHA, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to the PHA.

(b) The PHA assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by the PHA. Nor does the PHA assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

**8. Differing Site Conditions**

(a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site(s), of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inhering in work of the character provided for in the contract.

(b) The Contracting Officer shall investigate the site conditions promptly after receiving the notice. Work shall not proceed at the affected site, except at the Contractor's risk, until the Contracting Officer has provided written instructions to the Contractor. If the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, the Contractor shall file a claim in writing to the PHA within ten days after receipt of such instructions and, in any event, before proceeding with the work. An equitable adjustment in the contract price, the delivery schedule, or both shall be made under this clause and the contract modified in writing accordingly.

(c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in (a) above for giving written notice may be extended by the Contracting Officer.

(d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

**9. Specifications and Drawings for Construction**

(a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the Contracting Officer, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The Contracting Officer shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.

(b) Wherever in the specifications or upon the drawings the words 'directed", 'required", 'ordered", 'designated", 'prescribed", or words of like import are used, it shall be understood that the 'direction", 'requirement", 'order", 'designation", or 'prescription", of the Contracting Officer is intended and similarly the words 'approved", 'acceptable", 'satisfactory", or words of like import shall mean 'approved by", or 'acceptable to", or 'satisfactory to" the Contracting Officer, unless otherwise expressly stated.

(c) Where 'as shown", 'as indicated", 'as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract unless stated otherwise. The word 'provided" as used herein shall be understood to mean 'provide complete in place" that is 'furnished and installed".

(d) 'Shop drawings" means drawings, submitted to the PHA by the Contractor, subcontractor, or any lower tier subcontractor, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials of equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. The PHA may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

(e) If this contract requires shop drawings, the Contractor shall coordinate all such drawings, and review them for accuracy, completeness, and compliance with other contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Shop drawings submitted to the Contracting Officer without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer will indicate an approval or disapproval of the shop drawings and if not approved as submitted shall indicate the PHA's reasons therefore. Any work done before such approval shall be at the Contractor's risk. Approval by the Contracting Officer shall not relieve the Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with (f) below.

(f) If shop drawings show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the drawings, at the time of submission. If the Architect approves any such variation and the Contracting Officer concurs, the Contracting Officer shall issue an appropriate modification to the contract, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued.

(g) It shall be the responsibility of the Contractor to make timely requests of the PHA for such large scale and full size drawings, color schemes, and other additional information, not already in his possession, which shall be required in the planning and production of the work. Such requests may be submitted as the need arises, but each

such request shall be filed in ample time to permit appropriate action to be taken by all parties involved so as to avoid delay.

(h) The Contractor shall submit to the Contracting Officer for approval four copies (unless otherwise indicated) of all shop drawings as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all shop drawings, will be retained by the PHA and one set will be returned to the Contractor. As required by the Contracting Officer, the Contractor, upon completing the work under this contract, shall furnish a complete set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.

(i) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all shop drawings prepared by subcontractors are submitted to the Contracting Officer.

**10. As-Built Drawings**

(a) 'As-built drawings," as used in this clause, means drawings submitted by the Contractor or subcontractor at any tier to show the construction of a particular structure or work as actually completed under the contract. 'As-built drawings" shall be synonymous with 'Record drawings."

(b) As required by the Contracting Officer, the Contractor shall provide the Contracting Officer accurate information to be used in the preparation of permanent as-built drawings. For this purpose, the Contractor shall record on one set of contract drawings all changes from the installations originally indicated, and record final locations of underground lines by depth from finish grade and by accurate horizontal offset distances to permanent surface improvements such as buildings, curbs, or edges of walks.

(c) This clause shall be included in all subcontracts at any tier. It shall be the responsibility of the Contractor to ensure that all as-built drawings prepared by subcontractors are submitted to the Contracting Officer.

**11. Material and Workmanship**

(a) All equipment, material, and articles furnished under this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. References in the contract to equipment, material, articles, or patented processes by trade name, make, or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition. The Contractor may, at its option, use any equipment, material, article, or process that, in the judgment of, and as approved by the Contracting Officer, is equal to that named in the specifications, unless otherwise specifically provided in this contract.

(b) Approval of equipment and materials.

(1) The Contractor shall obtain the Contracting Officer's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the Contracting Officer the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the machinery and mechanical and other equipment. When required by this contract or by the Contracting Officer, the Contractor shall also obtain the Contracting Officer's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the Contractor shall provide full information concerning the material or articles. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.

(2) When required by the specifications or the Contracting Officer, the Contractor shall submit appropriately marked samples (and certificates related to them) for approval at the Contractor's expense, with all shipping charges prepaid. The Contractor shall label, or otherwise properly mark on the container, the material or product represented, its place of origin, the name of the producer, the Contractor's name, and the identification of the construction project for which the material or product is intended to be used.

(3) Certificates shall be submitted in triplicate, describing each sample submitted for approval and certifying that the material, equipment or accessory complies with contract requirements. The certificates shall include the name and brand of the product, name of manufacturer, and the location where produced.

(4) Approval of a sample shall not constitute a waiver of the PHA right to demand full compliance with contract requirements. Materials, equipment and accessories may be rejected for cause even though samples have been approved.

(5) Wherever materials are required to comply with recognized standards or specifications, such specifications shall be accepted as establishing the technical qualities and testing methods, but shall not govern the number of tests required to be made nor modify other contract requirements. The Contracting Officer may require laboratory test reports on items submitted for approval or may approve materials on the basis of data submitted in certificates with samples. Check tests will be made on materials delivered for use only as frequently as the Contracting Officer determines necessary to insure compliance of materials with the specifications. The Contractor will assume all costs of retesting materials which fail to meet contract requirements and/or testing materials offered in substitution for those found deficient.

(6) After approval, samples will be kept in the Project office until completion of work. They may be built into the work after a substantial quantity of the materials they represent has been built in and accepted.

(c) Requirements concerning lead-based paint. The Contractor shall comply with the requirements concerning lead-based paint contained in the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. 4821-4846) as implemented by 24 CFR Part 35.

**12. Permits and Codes**

(a) The Contractor shall give all notices and comply with all applicable laws, ordinances, codes, rules and regulations. Notwithstanding the requirement of the Contractor to comply with the drawings and specifications in the contract, all work installed shall comply with all applicable codes and regulations as amended by any waivers. Before installing the work, the Contractor shall examine the drawings and the specifications for

compliance with applicable codes and regulations bearing on the work and shall immediately report any discrepancy it may discover to the Contracting Officer. Where the requirements of the drawings and specifications fail to comply with the applicable code or regulation, the Contracting Officer shall modify the contract by change order pursuant to the clause entitled Changes herein to conform to the code or regulation.

(b) The Contractor shall secure and pay for all permits, fees, and licenses necessary for the proper execution and completion of the work. Where the PHA can arrange for the issuance of all or part of these permits, fees and licenses, without cost to the Contractor, the contract amount shall be reduced accordingly.

**13. Health, Safety, and Accident Prevention**

(a) In performing this contract, the Contractor shall:
   (1) Ensure that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his/her health and/or safety as determined under construction safety and health standards promulgated by the Secretary of Labor by regulation;
   (2) Protect the lives, health, and safety of other persons;
   (3) Prevent damage to property, materials, supplies, and equipment; and,
   (4) Avoid work interruptions.

(b) For these purposes, the Contractor shall:
   (1) Comply with regulations and standards issued by the Secretary of Labor at 29 CFR Part 1926. Failure to comply may result in imposition of sanctions pursuant to the Contract Work Hours and Safety Standards Act (Public Law 91-54, 83 Stat. 96), 40 U.S.C. 3701 et seq.; and
   (2) Include the terms of this clause in every subcontract so that such terms will be binding on each subcontractor.

(c) The Contractor shall maintain an accurate record of exposure data on all accidents incident to work performed under this contract resulting in death, traumatic injury, occupational disease, or damage to property, materials, supplies, or equipment, and shall report this data in the manner prescribed by 29 CFR Part 1904.

(d) The Contracting Officer shall notify the Contractor of any noncompliance with these requirements and of the corrective action required. This notice, when delivered to the Contractor or the Contractor's representative at the site of the work, shall be deemed sufficient notice of the noncompliance and corrective action required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to take corrective action promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not base any claim or request for equitable adjustment for additional time or money on any stop order issued under these circumstances.

(e) The Contractor shall be responsible for its subcontractors' compliance with the provisions of this clause. The Contractor shall take such action with respect to any subcontract as the PHA, the Secretary of Housing and Urban Development, or the Secretary of Labor shall direct as a means of enforcing such provisions.

**14. Temporary Heating**

The Contractor shall provide and pay for temporary heating, covering, and enclosures necessary to properly protect all work and materials against damage by dampness and cold, to dry out the work, and to facilitate the completion of the work. Any permanent heating equipment used shall be turned over to the PHA in the condition and at the time required by the specifications.

**15. Availability and Use of Utility Services**

(a) The PHA shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the PHA or, where the utility is produced by the PHA, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.

(b) The Contractor, at its expense and in a manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the PHA, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.

**16. Protection of Existing Vegetation, Structures, Equipment, Utilities, and Improvements**

(a) The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed under this contract, and which do not unreasonably interfere with the work required under this contract.

(b) The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during performance of this contract, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

(c) The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. Prior to disturbing the ground at the construction site, the Contractor shall ensure that all underground utility lines are clearly marked.

(d) The Contractor shall shore up, brace, underpin, secure, and protect as necessary all foundations and other parts of existing structures adjacent to, adjoining, and in the vicinity of the site, which may be affected by the excavations or other operations connected with the construction of the project.

(e) Any equipment temporarily removed as a result of work under this contract shall be protected, cleaned, and replaced in the same condition as at the time of award of this contract.

(f) New work which connects to existing work shall correspond in all respects with that to which it

connects and/or be similar to existing work unless otherwise required by the specifications.

(g) No structural members shall be altered or in any way weakened without the written authorization of the Contracting Officer, unless such work is clearly specified in the plans or specifications.

(h) If the removal of the existing work exposes discolored or unfinished surfaces, or work out of alignment, such surfaces shall be refinished, or the material replaced as necessary to make the continuous work uniform and harmonious. This, however, shall not be construed to require the refinishing or reconstruction of dissimilar finishes previously exposed, or finished surfaces in good condition, but in different planes or on different levels when brought together by the removal of intervening work, unless such refinishing or reconstruction is specified in the plans or specifications.

(i) The Contractor shall give all required notices to any adjoining or adjacent property owner or other party before the commencement of any work.

(j) The Contractor shall indemnify and save harmless the PHA from any damages on account of settlement or the loss of lateral support of adjoining property, any damages from changes in topography affecting drainage, and from all loss or expense and all damages for which the PHA may become liable in consequence of such injury or damage to adjoining and adjacent structures and their premises.

(k) The Contractor shall repair any damage to vegetation, structures, equipment, utilities, or improvements, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

**17. Temporary Buildings and Transportation of Materials**

(a) Temporary buildings (e.g., storage sheds, shops, offices, sanitary facilities) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the PHA. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

(b) The Contractor shall, as directed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any federal, state, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

**18. Clean Air and Water**

The contactor shall comply with the Clean Air Act, as amended, 42 USC 7401 et seq., the Federal Water Pollution Control Water Act, as amended, 33 U.S.C. 1251 et seq., and standards issued pursuant thereto in the facilities in which this contract is to be performed.

(f) The PHA may conduct routine inspections of the construction site on a daily basis.

**19. Energy Efficiency**

The Contractor shall comply with mandatory standards and policies relating to energy efficiency which are contained in the energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub.L. 94-163) for the State in which the work under the contract is performed.

**20. Inspection and Acceptance of Construction**

(a) Definitions. As used in this clause -

(1) “Acceptance” means the act of an authorized representative of the PHA by which the PHA approves and assumes ownership of the work performed under this contract. Acceptance may be partial or complete.

(2) “Inspection” means examining and testing the work performed under the contract (including, when appropriate, raw materials, equipment, components, and intermediate assemblies) to determine whether it conforms to contract requirements.

(3) “Testing” means that element of inspection that determines the properties or elements, including functional operation of materials, equipment, or their components, by the application of established scientific principles and procedures.

(b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. All work is subject to PHA inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.

(c) PHA inspections and tests are for the sole benefit of the PHA and do not: (1) relieve the Contractor of responsibility for providing adequate quality control measures; (2) relieve the Contractor of responsibility for loss or damage of the material before acceptance; (3) constitute or imply acceptance; or, (4) affect the continuing rights of the PHA after acceptance of the completed work under paragraph (j) below.

(d) The presence or absence of the PHA inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specifications without the Contracting Officer’s written authorization. All instructions and approvals with respect to the work shall be given to the Contractor by the Contracting Officer.

(e) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. The PHA may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. The PHA shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.

(g) The Contractor shall, without charge, replace or correct work found by the PHA not to conform to

contract requirements, unless the PHA decides that it is in its interest to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from the premises.

(h) If the Contractor does not promptly replace or correct rejected work, the PHA may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor, or (2) terminate for default the Contractor's right to proceed.

(i) If any work requiring inspection is covered up without approval of the PHA, it must, if requested by the Contracting Officer, be uncovered at the expense of the Contractor. If at any time before final acceptance of the entire work, the PHA considers it necessary or advisable, to examine work already completed by removing or tearing it out, the Contractor, shall on request, promptly furnish all necessary facilities, labor, and material. If such work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray all the expenses of the examination and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the contract, the Contracting Officer shall make an equitable adjustment to cover the cost of the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.

(j) The Contractor shall notify the Contracting Officer, in writing, as to the date when in its opinion all or a designated portion of the work will be substantially completed and ready for inspection. If the Architect determines that the state of preparedness is as represented, the PHA will promptly arrange for the inspection. Unless otherwise specified in the contract, the PHA shall accept, as soon as practicable after completion and inspection, all work required by the contract or that portion of the work the Contracting Officer determines and designates can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or the PHA's right under any warranty or guarantee.

**21. Use and Possession Prior to Completion**

(a) The PHA shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that the PHA intends to take possession of or use. However, failure of the Contracting Officer to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. The PHA's possession or use shall not be deemed an acceptance of any work under the contract.

(b) While the PHA has such possession or use, the Contractor shall be relieved of the responsibility for (1) the loss of or damage to the work resulting from the PHA's possession or use, notwithstanding the terms of the clause entitled Permits and Codes herein; (2) all maintenance costs on the areas occupied; and, (3) furnishing heat, light, power, and water used in the areas occupied without proper remuneration therefore. If prior possession or use by the PHA delays the progress of the

(h) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the work or causes additional expense to the Contractor, an equitable adjustment shall be made in the contract price or the time of completion, and the contract shall be modified in writing accordingly.

**22. Warranty of Title**

The Contractor warrants good title to all materials, supplies, and equipment incorporated in the work and agrees to deliver the premises together with all improvements thereon free from any claims, liens or charges, and agrees further that neither it nor any other person, firm or corporation shall have any right to a lien upon the premises or anything appurtenant thereto.

**23. Warranty of Construction**

(a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (j) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of 1 year (one year unless otherwise indicated) from the date of final acceptance of the work. If the PHA takes possession of any part of the work before final acceptance, this warranty shall continue for a period of (one year unless otherwise indicated) from the date that the PHA takes possession.

(b) The Contractor shall remedy, at the Contractor's expense, any failure to conform, or any defect. In addition, the Contractor shall remedy, at the Contractor's expense, any damage to PHA-owned or controlled real or personal property when the damage is the result of—
  (1) The Contractor's failure to conform to contract requirements; or
  (2) Any defects of equipment, material, workmanship or design furnished by the Contractor.

(c) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for (one year unless otherwise indicated) from the date of repair or replacement.

(d) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect or damage.

(e) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the PHA shall have the right to replace, repair or otherwise remedy the failure, defect, or damage at the Contractor's expense.

(f) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:
  (1) Obtain all warranties that would be given in normal commercial practice;
  (2) Require all warranties to be executed in writing, for the benefit of the PHA; and,
  (3) Enforce all warranties for the benefit of the PHA.

(g) In the event the Contractor's warranty under paragraph (a) of this clause has expired, the PHA may bring suit at its own expense to enforce a subcontractor's, manufacturer's or supplier's warranty.

Contractor shall not be liable for the repair of any defect of material or design furnished by the PHA nor for the

repair of any damage that results from any defect in PHA furnished material or design.

(i) Notwithstanding any provisions herein to the contrary, the establishment of the time periods in paragraphs (a) and (c) above relate only to the specific obligation of the Contractor to correct the work, and have no relationship to the time within which its obligation to comply with the contract may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to its obligation other than specifically to correct the work.

(j) This warranty shall not limit the PHA's rights under the Inspection and Acceptance of Construction clause of this contract with respect to latent defects, gross mistakes or fraud.

**24. Prohibition Against Liens**

The Contractor is prohibited from placing a lien on the PHA's property. This prohibition shall apply to all subcontractors at any tier and all materials suppliers.

**Administrative Requirements**

**25. Contract Period**

The Contractor shall complete all work required under this contract within 120 calendar days of the effective date of the contract, or within the time schedule established in the notice to proceed issued by the Contracting Officer.

**26. Order of Provisions**

In the event of a conflict between these General Conditions and the Specifications, the General Conditions shall prevail. In the event of a conflict between the contract and any applicable state or local law or regulation, the state or local law or regulation shall prevail; provided that such state or local law or regulation does not conflict with, or is less restrictive than applicable federal law, regulation, or Executive Order. In the event of such a conflict, applicable federal law, regulation, and Executive Order shall prevail.

**27. Payments**

(a) The PHA shall pay the Contractor the price as provided in this contract.

(b) The PHA shall make progress payments approximately every 30 days as the work proceeds, on estimates of work accomplished which meets the standards of quality established under the contract, as approved by the Contracting Officer. The PHA may, subject to written determination and approval of the Contracting Officer, make more frequent payments to contractors which are qualified small businesses.

(c) Before the first progress payment under this contract, the Contractor shall furnish, in such detail as requested by the Contracting Officer, a breakdown of the total contract price showing the amount included therein for each principal category of the work, which shall substantiate the payment amount requested in order to provide a basis for determining progress payments. The breakdown shall be approved by the Contracting Officer and must be acceptable to HUD. If the contract covers more than one project, the Contractor shall furnish a separate breakdown for each. The values and quantities employed in making up this breakdown are for determining the amount of progress payments and shall not be construed as a basis for additions to or deductions from the contract price. The Contractor shall prorate its overhead and profit over the construction period of the contract.

(d) The Contractor shall submit, on forms provided by the PHA, periodic estimates showing the value of the work performed during each period based upon the approved breakdown of the contract price. Such estimates shall be submitted not later than 30 days in advance of the date set for payment and are subject to correction and revision as required. The estimates must be approved by the Contracting Officer with the concurrence of the Architect prior to payment. If the contract covers more than one project, the Contractor shall furnish a separate progress payment estimate for each.

(e) Along with each request for progress payments and the required estimates, the Contractor shall furnish the following certification, or payment shall not be made:

I hereby certify, to the best of my knowledge and belief, that:

(1) The amounts requested are only for performance in accordance with the specifications, terms, and conditions of the contract;

(2) Payments to subcontractors and suppliers have been made from previous payments received under the contract, and timely payments will be made from the proceeds of the payment covered by this certification, in accordance with subcontract agreements; and,

(3) This request for progress payments does not include any amounts which the prime contractor intends to withhold or retain from a subcontractor or supplier in accordance with the terms and conditions of the subcontract.

_____

Name:

_____

Title:

_____

Date:

(f) Except as otherwise provided in State law, the PHA shall retain ten (10) percent of the amount of progress payments until completion and acceptance of all work under the contract; except, that if upon completion of 50 percent of the work, the Contracting Officer, after consulting with the Architect, determines that the Contractor's performance and progress are satisfactory, the PHA may make the remaining payments in full for the work subsequently completed. If the Contracting Officer subsequently determines that the Contractor's performance and progress are unsatisfactory, the PHA shall reinstate the ten (10) percent (or other percentage as provided in State law) retainage until such time as the Contracting Officer determines that performance and progress are satisfactory.

(g) The Contracting Officer may authorize material delivered on the site and preparatory work done to be taken into consideration when computing progress payments.

Material delivered to the Contractor at locations other than the site may also be taken into consideration if the Contractor furnishes satisfactory evidence that (1) it has acquired title to such material; (2) the material is properly stored in a bonded warehouse, storage yard, or similar suitable place as may be approved by the Contracting

Officer; (3) the material is insured to cover its full value; and (4) the material will be used to perform this contract. Before any progress payment which includes delivered material is made, the Contractor shall furnish such documentation as the Contracting Officer may require to assure the protection of the PHA's interest in such materials. The Contractor shall remain responsible for such stored material notwithstanding the transfer of title to the PHA.

(h) All material and work covered by progress payments made shall, at the time of payment become the sole property of the PHA, but this shall not be construed as (1) relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or, (2) waiving the right of the PHA to require the fulfillment of all of the terms of the contract. In the event the work of the Contractor has been damaged by other contractors or persons other than employees of the PHA in the course of their employment, the Contractor shall restore such damaged work without cost to the PHA and to seek redress for its damage only from those who directly caused it.

(i) The PHA shall make the final payment due the Contractor under this contract after (1) completion and final acceptance of all work; and (2) presentation of release of all claims against the PHA arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. Each such exception shall embrace no more than one claim, the basis and scope of which shall be clearly defined. The amounts for such excepted claims shall not be included in the request for final payment. A release may also be required of the assignee if the Contractor's claim to amounts payable under this contract has been assigned.

(j) Prior to making any payment, the Contracting Officer may require the Contractor to furnish receipts or other evidence of payment from all persons performing work and supplying material to the Contractor, if the Contracting Officer determines such evidence is necessary to substantiate claimed costs.

(k) The PHA shall not; (1) determine or adjust any claims for payment or disputes arising there under between the Contractor and its subcontractors or material suppliers; or, (2) withhold any moneys for the protection of the subcontractors or material suppliers. The failure or refusal of the PHA to withhold moneys from the Contractor shall in nowise impair the obligations of any surety or sureties under any bonds furnished under this contract.

**28. Contract Modifications**

(a) Only the Contracting Officer has authority to modify any term or condition of this contract. Any contract modification shall be authorized in writing.

(b) The Contracting Officer may modify the contract unilaterally (1) pursuant to a specific authorization stated in a contract clause (e.g., Changes); or (2) for administrative matters which do not change the rights or responsibilities of the parties (e.g., change in the PHA address). All other contract modifications shall be in the form of supplemental agreements signed by the Contractor and the Contracting Officer.

(c) When a proposed modification requires the approval of HUD prior to its issuance (e.g., a change order that exceeds the PHA's approved threshold), such modification shall not be effective until the required approval is received by the PHA.

**29. Changes**

(a) The Contracting Officer may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make changes in the work within the general scope of the contract including changes:
  (1) In the specifications (including drawings and designs);
  (2) In the method or manner of performance of the work;
  (3) PHA-furnished facilities, equipment, materials, services, or site; or,
  (4) Directing the acceleration in the performance of the work.

(b) Any other written order or oral order (which, as used in this paragraph (b), includes direction, instruction, interpretation, or determination) from the Contracting Officer that causes a change shall be treated as a change order under this clause; provided, that the Contractor gives the Contracting Officer written notice stating (1) the date, circumstances and source of the order and (2) that the Contractor regards the order as a change order.

(c) Except as provided in this clause, no order, statement or conduct of the Contracting Officer shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment.

(d) If any change under this clause causes an increase or decrease in the Contractor's cost of, or the time required for the performance of any part of the work under this contract, whether or not changed by any such order, the Contracting Officer shall make an equitable adjustment and modify the contract in writing. However, except for a adjustment based on defective specifications, no proposal for any change under paragraph (b) above shall be allowed for any costs incurred more than 20 days (5 days for oral orders) before the Contractor gives written notice as required. In the case of defective specifications for which the PHA is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the Contractor in attempting to comply with the defective specifications.

(e) The Contractor must assert its right to an adjustment under this clause within 30 days after (1) receipt of a written change order under paragraph (a) of this clause, or (2) the furnishing of a written notice under paragraph (b) of this clause, by submitting a written statement describing the general nature and the amount of the proposal. If the facts justify it, the Contracting Officer may extend the period for submission. The proposal may be included in the notice required under paragraph (b) above. No proposal by the Contractor for an equitable adjustment shall be allowed if asserted after final payment under this contract.

(f) The Contractor's written proposal for equitable adjustment shall be submitted in the form of a lump sum proposal supported with an itemized breakdown of all increases and decreases in the contract in at least the following details:

(1) Direct Costs. Materials (list individual items, the quantity and unit cost of each, and the aggregate cost); Transportation and delivery costs associated with materials; Labor breakdowns by hours or unit costs (identified with specific work to be performed); Construction equipment exclusively necessary for the change; Costs of preparation and/ or revision to shop drawings resulting from the change; Worker's

Compensation and Public Liability Insurance; Employment taxes under FICA and FUTA; and, Bond Costs when size of change warrants revision.

(2) Indirect Costs. Indirect costs may include overhead, general and administrative expenses, and fringe benefits not normally treated as direct costs.

(3) Profit. The amount of profit shall be negotiated and may vary according to the nature, extent, and complexity of the work required by the change.

The allowability of the direct and indirect costs shall be determined in accordance with the Contract Cost Principles and Procedures for Commercial Firms in Part 31 of the Federal Acquisition Regulation (48 CFR 1-31), as implemented by HUD Handbook 2210.18, in effect on the date of this contract. The Contractor shall not be allowed a profit on the profit received by any subcontractor. Equitable adjustments for deleted work shall include a credit for profit and may include a credit for indirect costs. On proposals covering both increases and decreases in the amount of the contract, the application of indirect costs and profit shall be on the net-change in direct costs for the Contractor or subcontractor performing the work.

(g) The Contractor shall include in the proposal its request for time extension (if any), and shall include sufficient information and dates to demonstrate whether and to what extent the change will delay the completion of the contract in its entirety.

(h) The Contracting Officer shall act on proposals within 30 days after their receipt, or notify the Contractor of the date when such action will be taken.

(i) Failure to reach an agreement on any proposal shall be a dispute under the clause entitled Disputes herein. Nothing in this clause, however, shall excuse the Contractor from proceeding with the contract as changed.

(j) Except in an emergency endangering life or property, no change shall be made by the Contractor without a prior order from the Contracting Officer.

**30. Suspension of Work**

(a) The Contracting Officer may order the Contractor in writing to suspend, delay, or interrupt all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of the PHA.

(b) If the performance of all or any part of the work is, for an unreasonable period of time, suspended, delayed, or interrupted (1) by an act of the Contracting Officer in the administration of this contract, or (2) by the Contracting Officer's failure to act within the time specified (or within a reasonable time if not specified) in this contract an adjustment shall be made for any increase in the cost of performance of the contract (excluding profit) necessarily caused by such unreasonable suspension, delay, or interruption and the contract modified in writing accordingly. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the Contractor or for which any equitable adjustment is provided for or excluded under any other provision of this contract.

(c) A claim under this clause shall not be allowed (1) for any proceed with the work (or separable part of the work) that has been delayed. In this event, the PHA may take over the work and complete it, by contract or otherwise, and costs incurred more than 20 days before the Contractor shall have notified the Contracting Officer in writing of the act or failure to act involved (but this requirement shall not apply as to a claim resulting from a suspension order); and, (2) unless the claim, in an amount stated, is asserted in writing as soon as practicable after the termination of the suspension, delay, or interruption, but not later than the date of final payment under the contract.

**31. Disputes**

(a) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to the contract. A claim arising under the contract, unlike a claim relating to the contract, is a claim that can be resolved under a contract clause that provides for the relief sought by the claimant. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim. The submission may be converted to a claim by complying with the requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time.

(b) Except for disputes arising under the clauses entitled Labor Standards - Davis Bacon and Related Acts, herein, all disputes arising under or relating to this contract, including any claims for damages for the alleged breach thereof which are not disposed of by agreement, shall be resolved under this clause.

(c) All claims by the Contractor shall be made in writing and submitted to the Contracting Officer for a written decision. A claim by the PHA against the Contractor shall be subject to a written decision by the Contracting Officer.

(d) The Contracting Officer shall, within 60 (unless otherwise indicated) days after receipt of the request, decide the claim or notify the Contractor of the date by which the decision will be made.

(e) The Contracting Officer's decision shall be final unless the Contractor (1) appeals in writing to a higher level in the PHA in accordance with the PHA's policy and procedures, (2) refers the appeal to an independent mediator or arbitrator, or (3) files suit in a court of competent jurisdiction. Such appeal must be made within (30 unless otherwise indicated) days after receipt of the Contracting Officer's decision.

(f) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

**32. Default**

(a) If the Contractor refuses or fails to prosecute the work, or any separable part thereof, with the diligence that will insure its completion within the time specified in this contract, or any extension thereof, or fails to complete said work within this time, the Contracting Officer may, by written notice to the Contractor, terminate the right to may take possession of and use any materials, equipment, and plant on the work site necessary for completing the work. The Contractor and its sureties shall

be liable for any damage to the PHA resulting from the Contractor's refusal or failure to complete the work within the specified time, whether or not the Contractor's right to proceed with the work is terminated. This liability includes any increased costs incurred by the PHA in completing the work.

(b) The Contractor's right to proceed shall not be terminated or the Contractor charged with damages under this clause if—

(1) The delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such causes include (i) acts of God, or of the public enemy, (ii) acts of the PHA or other governmental entity in either its sovereign or contractual capacity, (iii) acts of another contractor in the performance of a contract with the PHA, (iv) fires, (v) floods, (vi) epidemics, (vii) quarantine restrictions, (viii) strikes, (ix) freight embargoes, (x) unusually severe weather, or (xi) delays of subcontractors or suppliers at any tier arising from unforeseeable causes beyond the control and without the fault or negligence of both the Contractor and the subcontractors or suppliers; and

(2) The Contractor, within days (10 days unless otherwise indicated) from the beginning of such delay (unless extended by the Contracting Officer) notifies the Contracting Officer in writing of the causes of delay. The Contracting Officer shall ascertain the facts and the extent of the delay. If, in the judgment of the Contracting Officer, the findings of fact warrant such action, time for completing the work shall be extended by written modification to the contract. The findings of the Contracting Officer shall be reduced to a written decision which shall be subject to the provisions of the Disputes clause of this contract.

(c) If, after termination of the Contractor's right to proceed, it is determined that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the termination had been for convenience of the PHA.

**33. Liquidated Damages**

(a) If the Contractor fails to complete the work within the time specified in the contract, or any extension, as specified in the clause entitled Default of this contract, the Contractor shall pay to the PHA as liquidated damages, the sum of $ * 100.00 Contracting Officer insert amount] for each day of delay. If different completion dates are specified in the contract for separate parts or stages of the work, the amount of liquidated damages shall be assessed on those parts or stages which are delayed. To the extent that the Contractor's delay or nonperformance is excused under another clause in this contract, liquidated damages shall not be due the PHA. The Contractor remains liable for damages caused other than by delay.

(b) If the PHA terminates the Contractor's right to proceed, the resulting damage will consist of liquidated damages until such reasonable time as may be required for final completion of the work together with any increased costs occasioned the PHA in completing the work.

(c) If the PHA does not terminate the Contractor's right to proceed, the resulting damage will consist of liquidated damages until the work is completed or accepted.

*$100.00 per dwelling unit per day,
$100.00 per non-dwelling unit per day,
in addition to $100.00 per site per day

**34. Termination for Convenience**

(a) The Contracting Officer may terminate this contract in whole, or in part, whenever the Contracting Officer determines that such termination is in the best interest of the PHA. Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying the extent to which the performance of the work under the contract is terminated, and the date upon which such termination becomes effective.

(b) If the performance of the work is terminated, either in whole or in part, the PHA shall be liable to the Contractor for reasonable and proper costs resulting from such termination upon the receipt by the PHA of a properly presented claim setting out in detail: (1) the total cost of the work performed to date of termination less the total amount of contract payments made to the Contractor; (2) the cost (including reasonable profit) of settling and paying claims under subcontracts and material orders for work performed and materials and supplies delivered to the site, payment for which has not been made by the PHA to the Contractor or by the Contractor to the subcontractor or supplier; (3) the cost of preserving and protecting the work already performed until the PHA or assignee takes possession thereof or assumes responsibility therefore; (4) the actual or estimated cost of legal and accounting services reasonably necessary to prepare and present the termination claim to the PHA; and (5) an amount constituting a reasonable profit on the value of the work performed by the Contractor.

(c) The Contracting Officer will act on the Contractor's claim within days (60 days unless otherwise indicated) of receipt of the Contractor's claim.

(d) Any disputes with regard to this clause are expressly made subject to the provisions of the Disputes clause of this contract.

**35. Assignment of Contract**

The Contractor shall not assign or transfer any interest in this contract; except that claims for monies due or to become due from the PHA under the contract may be assigned to a bank, trust company, or other financial institution. Such assignments of claims shall only be made with the written concurrence of the Contracting Officer. If the Contractor is a partnership, this contract shall inure to the benefit of the surviving or remaining member(s) of such partnership as approved by the Contracting Officer.

**36. Insurance**

(a) Before commencing work, the Contractor and each subcontractor shall furnish the PHA with certificates of insurance showing the following insurance is in force and will insure all operations under the Contract:

(1) Workers' Compensation, in accordance with state or Territorial Workers' Compensation laws.

(2) Commercial General Liability with a combined single limit for bodily injury and property damage of not less than $ 1 Mil [Contracting Officer insert amount]

per occurrence to protect the Contractor and each subcontractor against claims for bodily injury or death and damage to the property of others. This shall cover the use of all equipment, hoists, and vehicles on the site(s) not covered by Automobile Liability under (3) below. If the Contractor has a "claims-made" policy, then the following additional requirements apply: the policy must provide a "retroactive date" which must be on or before the execution date of the Contract; and the extended reporting period may not be less than five years following the completion date of the Contract.

(3) Automobile Liability on owned and non -owned motor vehicles used on the site(s) or in connection therewith for a combined single limit for bodily injury and property damage of not less than $1 Mil [Contracting Officer insert amount] per occurrence.

(b) Before commencing work, the Contractor shall furnish the PHA with a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) Insurance on all work in place and/or materials stored at the building site(s), including foundations and building equipment, is in force. The Builder's Risk Insurance shall be for the benefit of the Contractor and the PHA as their interests may appear and each shall be named in the policy or policies as an insured. The Contractor in installing equipment supplied by the PHA shall carry insurance on such equipment from the time the Contractor takes possession thereof until the Contract work is accepted by the PHA. The Builder's Risk Insurance need not be carried on excavations, piers, footings, or foundations until such time as work on the superstructure is started. It need not be carried on landscape work. Policies shall furnish coverage at all times for the full cash value of all completed construction, as well as materials in place and/or stored at the site(s), whether or not partial payment has been made by the PHA. The Contractor may terminate this insurance on buildings as of the date taken over for occupancy by the PHA. The Contractor is not required to carry Builder's Risk Insurance for modernization work which does not involve structural alterations or additions and where the PHA's existing fire and extended coverage policy can be endorsed to include such work.

(c) All insurance shall be carried with companies which are financially responsible and admitted to do business in the State in which the project is located. If any such insurance is due to expire during the construction period, the Contractor (including subcontractors, as applicable) shall not permit the coverage to lapse and shall furnish evidence of coverage to the Contracting Officer. All certificates of insurance, as evidence of coverage, shall provide that no coverage may be canceled or non-renewed by the insurance company until at least 30 days prior written notice has been given to the Contracting Officer.

**37. Subcontracts**

(a) Definitions. As used in this contract -

(1) "Subcontract" means any contract, purchase order, or other purchase agreement, including modifications and change orders to the foregoing, entered into by a subcontractor to furnish supplies, materials, equipment, and services for the performance of the prime contract or a subcontract.

(2) "Subcontractor" means any supplier, vendor, or firm that furnishes supplies, materials, equipment, or services to or for the Contractor or another subcontractor.

(b) The Contractor shall not enter into any subcontract with any subcontractor who has been temporarily denied participation in a HUD program or who has been suspended or debarred from participating in contracting programs by any agency of the United States Government or of the state in which the work under this contract is to be performed.

(c) The Contractor shall be as fully responsible for the acts or omissions of its subcontractors, and of persons either directly or indirectly employed by them as for the acts or omissions of persons directly employed by the Contractor.

(d) The Contractor shall insert appropriate clauses in all subcontracts to bind subcontractors to the terms and conditions of this contract insofar as they are applicable to the work of subcontractors.

(e) Nothing contained in this contract shall create any contractual relationship between any subcontractor and the PHA or between the subcontractor and HUD.

**38. Subcontracting with Small and Minority Firms, Women's Business Enterprise, and Labor Surplus Area Firms**

The Contractor shall take the following steps to ensure that, whenever possible, subcontracts are awarded to small business firms, minority firms, women's business enterprises, and labor surplus area firms:

(a) Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

(b) Ensuring that small and minority businesses and women's business enterprises are solicited whenever they are potential sources;

(c) Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses and women's business enterprises;

(d) Establishing delivery schedules, where the requirements of the contract permit, which encourage participation by small and minority businesses and women's business enterprises; and

(e) Using the services and assistance of the U.S. Small Business Administration, the Minority Business Development Agency of the U.S. Department of Commerce, and State and local governmental small business agencies.

**39. Equal Employment Opportunity**

During the performance of this contract, the Contractor agrees as follows:

(a) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or handicap.

(b) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, national origin, or handicap. Such action shall include, but not be limited to, (1) employment, (2) upgrading, (3) demotion, (4) transfer, (5) recruitment or recruitment advertising, (6) layoff or termination, (7) rates of pay or other forms of compensation, and (8) selection for training, including apprenticeship.

(c) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

(d) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or handicap.

(e) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.

(f) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.

(g) The Contractor shall furnish all information and reports required by Executive Order 11246, as amended, Section 503 of the Rehabilitation Act of 1973, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto. The Contractor shall permit access to its books, records, and accounts by the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(h) In the event of a determination that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts, or Federally assisted construction contracts under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.

(i) The Contractor shall include the terms and conditions of this clause in every subcontract or purchase order unless exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as the Secretary of Housing and Urban Development or the Secretary of Labor may direct as a means of enforcing such provisions, including sanctions for noncompliance; provided that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.

(j) Compliance with the requirements of this clause shall be to the maximum extent consistent with, but not in derogation of, compliance with section 7(b) of the Indian Self-Determination and Education Assistance Act and the Indian Preference clause of this contract.

**40. Employment, Training, and Contracting Opportunities for Low-Income Persons, Section 3 of the Housing and Urban Development Act of 1968.**

(a) The work to be performed under this contract is subject to the requirements of section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (section 3). The purpose of section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

(b) The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the Part 135 regulations.

(c) The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

(d) The contractor agrees to include this section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

(e) The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.

(f) Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

(g) With respect to work performed in connection with section 3 covered Indian housing assistance, section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of section 3 and section 7(b)agree to comply with section 3 to the maximum extent feasible, but not in derogation of compliance with section 7(b).

**41. Interest of Members of Congress**

No member of or delegate to the Congress of the United States of America shall be admitted to any share or part of this contract or to any benefit that may arise therefrom.

**42. Interest of Members, Officers, or Employees and Former Members, Officers, or Employees**

No member, officer, or employee of the PHA, no member of the governing body of the locality in which the project is situated, no member of the governing body of the locality in which the PHA was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the project, shall, during his or her tenure, or for one year thereafter, have any interest, direct or indirect, in this contract or the proceeds thereof.

**43. Limitations on Payments made to Influence Certain Federal Financial Transactions**

(a) The Contractor agrees to comply with Section 1352 of Title 31, United States Code which prohibits the use of Federal appropriated funds to pay any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, and officer or employee of Congress, or an employee of a Member of Congress in connection with any of the following covered Federal actions: the awarding of any Federal contract; the making of any Federal grant; the making of any Federal loan; the entering into of any cooperative agreement; or the modification of any Federal contract, grant, loan, or cooperative agreement.

(b) The Contractor further agrees to comply with the requirement of the Act to furnish a disclosure (OMB Standard Form LLL, Disclosure of Lobbying Activities) if any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a Federal contract, grant, loan, or cooperative agreement.

**44. Royalties and Patents**

The Contractor shall pay all royalties and license fees. It shall defend all suits or claims for infringement of any patent rights and shall save the PHA harmless from loss on account thereof; except that the PHA shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified and the Contractor has no reason to believe that the specified design, process, or product is an infringement. If, however, the Contractor has reason to believe that any design, process or product specified is an infringement of a patent, the Contractor shall promptly notify the Contracting Officer. Failure to give such notice shall make the Contractor responsible for resultant loss.

**45. Examination and Retention of Contractor's Records**

(a) The PHA, HUD, or Comptroller General of the United States, or any of their duly authorized representatives shall, until 3 years after final payment under this contract, have access to and the right to examine any of the Contractor's directly pertinent books, documents, papers, or other records involving transactions related to this contract for the purpose of making audit, examination, excerpts, and transcriptions.

(b) The Contractor agrees to include in first-tier subcontracts under this contract a clause substantially the same as paragraph (a) above. "Subcontract," as used in this clause, excludes purchase orders not exceeding $10,000.

(c) The periods of access and examination in paragraphs (a) and (b) above for records relating to (1) appeals under the Disputes clause of this contract, (2) litigation or settlement of claims arising from the performance of this contract, or (3) costs and expenses of this contract to which the PHA, HUD, or Comptroller General or any of their duly authorized representatives has taken exception shall continue until disposition of such appeals, litigation, claims, or exceptions.

**46. Labor Standards - Davis-Bacon and Related Acts**

If the total amount of this contract exceeds $2,000, the Federal labor standards set forth in the clause below shall apply to the development or construction work to be performed under the contract.

(a) Minimum Wages.

(1) All laborers and mechanics employed under this contract in the development or construction of the project(s) involved will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of 29 CFR 5.5(a)(1)(iv); also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the regular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under 29 CFR 5.5(a)(1)(ii) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and

accessible place where it can be easily seen by the workers.

(2) (i) Any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. HUD shall approve an additional classification and wage rate and fringe benefits therefor only when all the following criteria have been met: (A) The work to be performed by the classification requested is not performed by a classification in the wage determination; and (B) The classification is utilized in the area by the construction industry; and (C) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(ii) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and HUD or its designee agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by HUD or its designee to the Administrator of the Wage and Hour Division, Employee Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.

(iii) In the event the Contractor, the laborers or mechanics to be employed in the classification or their representatives, and HUD or its designee do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), HUD or its designee shall refer the questions, including the views of all interested parties and the recommendation of HUD or its designee, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise HUD or its designee or will notify HUD or its designee within the 30-day period that additional time is necessary.

(iv) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (a)(2)(ii) or (iii) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in classification.

(3) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(4) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided, that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(b) Withholding of funds. HUD or its designee shall, upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this contract or any other Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime Contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working in the construction or development of the project, all or part of the wages required by the contract, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased. HUD or its designee may, after written notice to the Contractor, disburse such amounts withheld for and on account of the Contractor or subcontractor to the respective employees to whom they are due.

(c) Payrolls and basic records.

(1) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working in the construction or development of the project. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found, under 29 CFR 5.5(a)(1)(iv), that the wages of any laborer or mechanic include the amount of costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(2) (i) The Contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Contracting Officer for transmission to HUD or its designee. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under subparagraph (c)(1) of this clause. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The Contractor is responsible for the submission of copies of payrolls by all subcontractors. (Approved by the Office of Management and Budget under OMB Control Number 1214-0149.)

(ii) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(A) That the payroll for the payroll period contains the information required to be maintained under paragraph (c) (1) of this clause and that such information is correct and complete;

(B) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in 29 CFR Part 3; and

(C) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(iii) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirements for submission of the "Statement of Compliance" required by subparagraph (c)(2)(ii) of this clause.

(iv) The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.

(3) The Contractor or subcontractor shall make the records required under subparagraph (c)(1) available for inspection, copying, or transcription by authorized representatives of HUD or its designee, the Contracting Officer, or the Department of Labor and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, HUD or its designee may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(d) (1) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship and Training, Employer and Labor Services (OATELS), or with a State Apprenticeship Agency recognized by OATELS, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by OATELS or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator of the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event OATELS, or a State Apprenticeship Agency recognized by OATELS, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(2) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under

the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate in the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(3) Equal employment opportunity. The utilization of apprentices, trainees, and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

(e) Compliance with Copeland Act requirements. The Contractor shall comply with the requirements of 29 CFR Part 3, which are hereby incorporated by reference in this contract.

(f) Contract termination; debarment. A breach of this contract clause may be grounds for termination of the contract and for debarment as a Contractor and a subcontractor as provided in 29 CFR 5.12.

(g) Compliance with Davis-Bacon and related Act requirements. All rulings and interpretations of the Davis-Bacon and related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

(h) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this clause shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the PHA, HUD, the U.S. Department of Labor, or the employees or their representatives.

(i) Certification of eligibility.

(1) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(2) No part of this contract shall be subcontracted to any person or firm ineligible for award of a United States Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(3) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

(j) Contract Work Hours and Safety Standards Act. As used in this paragraph, the terms "laborers" and "mechanics" include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics, including watchmen and guards, shall require or permit any such laborer or mechanic in any workweek in which the individual is employed on such work to work in excess of 40 hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of 40 hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the provisions set forth in subparagraph (j)(1) of this clause, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic (including watchmen and guards) employed in violation of the provisions set forth in subparagraph (j)(1) of this clause, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by provisions set forth in subparagraph (j)(1) of this clause.

(3) Withholding for unpaid wages and liquidated damages. HUD or its designee shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the Contractor or subcontractor under any such contract or any Federal contract with the same prime Contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime Contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the provisions set forth in subparagraph (j)(2) of this clause.

(k) Subcontracts. The Contractor or subcontractor shall insert in any subcontracts all the provisions contained in this clause, and such other clauses as HUD or its designee may by appropriate instructions require, and also a clause requiring the subcontractors to include these provisions in any lower tier subcontracts. The prime Contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all these provisions.

**47. Non-Federal Prevailing Wage Rates**

(a) Any prevailing wage rate (including basic hourly rate and any fringe benefits), determined under State or tribal law to be prevailing, with respect to any employee in any trade or position employed under the contract, is inapplicable to the contract and shall not be enforced against the Contractor or any subcontractor, with respect to employees engaged under the contract whenever such non-Federal prevailing wage rate exceeds: (1) The applicable wage rate determined by the Secretary of Labor pursuant to the Davis-Bacon Act (40 U.S.C. 3141 et seq.) to be prevailing in the locality with respect to such trade;

(b) An applicable apprentice wage rate based thereon specified in an apprenticeship program registered with the U.S. Department of Labor (DOL) or a DOL-recognized State Apprenticeship Agency; or

(c) An applicable trainee wage rate based thereon specified in a DOL-certified trainee program.

**48. Procurement of Recovered Materials**.

(a) In accordance with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, the Contractor shall procure items designated in guidelines of the Environmental Protection Agency (EPA) at 40 CFR Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition. The Contractor shall procure items designated in the EPA guidelines that contain the highest percentage of recovered materials practicable unless the Contractor determines that such items: (1) are not reasonably available in a reasonable period of time; (2) fail to meet reasonable performance standards, which shall be determined on the basis of the guidelines of the National Institute of Standards and Technology, if applicable to the item; or (3) are only available at an unreasonable price.

(b) Paragraph (a) of this clause shall apply to items purchased under this contract where: (1) the Contractor purchases in excess of $10,000 of the item under this contract; or (2) during the preceding Federal fiscal year, the Contractor: (i) purchased any amount of the items for use under a contract that was funded with Federal appropriations and was with a Federal agency or a State agency or agency of a political subdivision of a State; and (ii) purchased a total of in excess of $10,000 of the item both under and outside that contract.

**U.S. Department of Housing and Urban Development**

Office of Public and Indian Housing

# Representations, Certifications, and Other Statements of Bidders

# Public and Indian Housing Programs

# Representations, Certifications, and Other Statements of Bidders

Public and Indian Housing Programs

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## 1. Certificate of Independent Price Determination

(a) The bidder certifies that--

(1) The prices in this bid have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other bidder or competitor relating to (i) those prices, (ii) the intention to submit a bid, or (iii) the methods or factors used to calculate the prices offered;

(2) The prices in this bid have not been and will not be knowingly disclosed by the bidder, directly or indirectly, to any other bidder or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a competitive proposal solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the bidder to induce any other concern to submit or not to submit a bid for the purpose of restricting competition.

(b) Each signature on the bid is considered to be a certification by the signatory that the signatory--

(1) Is the person in the bidder's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(l) through (a)(3) above; or

(2) (i) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(l) through (a)(3) above.

_____ [insert full name of person(s) in the bidder's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the bidder's organization];

(ii) As an authorized agent, does certify that the principals named in subdivision (b)(2)(i) above have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) above; and

(iii) As an agent, has not personally participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) above.

(c) If the bidder deletes or modifies subparagraph (a)2 above, the bidder must furnish with its bid a signed statement setting forth in detail the circumstances of the disclosure.

[ ] [Contracting Officer check if following paragraph is applicable]

(d) Non-collusive affidavit. (applicable to contracts for construction and equipment exceeding $50,000)

(1) Each bidder shall execute, in the form provided by the PHA/IHA, an affidavit to the effect that he/she has not colluded with any other person, firm or corporation in regard to any bid submitted in response to this solicitation. If the successful bidder did not submit the affidavit with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the affidavit by that date may render the bid nonresponsive. No contract award will be made without a properly executed affidavit.

(2) A fully executed "Non-collusive Affidavit" ☐ is, ☐ is not included with the bid.

## 2. Contingent Fee Representation and Agreement

(a) Definitions. As used in this provision:

"Bona fide employee" means a person, employed by a bidder and subject to the bidder's supervision and control as to time, place, and manner of performance, who neither exerts, nor proposes to exert improper influence to solicit or obtain contracts nor holds out as being able to obtain any contract(s) through improper influence.

"Improper influence" means any influence that induces or tends to induce a PHA/IHA employee or officer to give consideration or to act regarding a PHA/IHA contract on any basis other than the merits of the matter.

(b) The bidder represents and certifies as part of its bid that, except for full-time bona fide employees working solely for the bidder, the bidder:

(1) ☐ has, ☐ has not employed or retained any person or company to solicit or obtain this contract; and

(2) ☐ has, ☐ has not paid or agreed to pay to any person or company employed or retained to solicit or obtain this contract any commission, percentage, brokerage, or other fee contingent upon or resulting from the award of this contract.

(c) If the answer to either (a)(1) or (a)(2) above is affirmative, the bidder shall make an immediate and full written disclosure to the PHA/IHA Contracting Officer.

(d) Any misrepresentation by the bidder shall give the PHA/IHA the right to (1) terminate the contract; (2) at its discretion, deduct from contract payments the amount of any commission, percentage, brokerage, or other contingent fee; or (3) take other remedy pursuant to the contract.

## 3. Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions (applicable to contracts exceeding $100,000)

(a) The definitions and prohibitions contained in Section 1352 of title 31, United States Code, are hereby incorporated by reference in paragraph (b) of this certification.

(b) The bidder, by signing its bid, hereby certifies to the best of his or her knowledge and belief as of December 23, 1989 that:

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of a contract resulting from this solicitation;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the bidder shall complete and submit, with its bid, OMB standard form LLL, "Disclosure of Lobbying Activities;" and

(3) He or she will include the language of this certification in all subcontracts at any tier and require that all recipients of subcontract awards in excess of $100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than $10,000, and not more than $100,000, for each such failure.

(d) Indian tribes (except those chartered by States) and Indian organizations as defined in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450B) are exempt from the requirements of this provision.

### 4. Organizational Conflicts of Interest Certification

The bidder certifies that to the best of its knowledge and belief and except as otherwise disclosed, he or she does not have any organizational conflict of interest which is defined as a situation in which the nature of work to be performed under this proposed contract and the bidder's organizational, financial, contractual, or other interests may, without some restriction on future activities:

(a) Result in an unfair competitive advantage to the bidder; or,

(b) Impair the bidder's objectivity in performing the contract work.

☐ In the absence of any actual or apparent conflict, I hereby certify that to the best of my knowledge and belief, no actual or apparent conflict of interest exists with regard to my possible performance of this procurement.

### 5. Bidder's Certification of Eligibility

(a) By the submission of this bid, the bidder certifies that to the best of its knowledge and belief, neither it, nor any person or firm which has an interest in the bidder's firm, nor any of the bidder's subcontractors, is ineligible to:

(1) Be awarded contracts by any agency of the United States Government, HUD, or the State in which this contract is to be performed; or,

(2) Participate in HUD programs pursuant to 24 CFR Part 24.

(b) The certification in paragraph (a) above is a material representation of fact upon which reliance was placed when making award. If it is later determined that the bidder knowingly rendered an erroneous certification, the contract may be terminated for default, and the bidder may be debarred or suspended from participation in HUD programs and other Federal contract programs.

### 6. Minimum Bid Acceptance Period

(a) "Acceptance period," as used in this provision, means the number of calendar days available to the PHA/IHA for awarding a contract from the date specified in this solicitation for receipt of bids.

(b) This provision supersedes any language pertaining to the acceptance period that may appear elsewhere in this solicitation.

(c) The PHA/IHA requires a minimum acceptance period of [Contracting Officer insert time period] calendar days.

(d) In the space provided immediately below, bidders may specify a longer acceptance period than the PHA's/IHA's minimum requirement. The bidder allows the following acceptance period: ☐ calendar days.

(e) A bid allowing less than the PHA's/IHA's minimum acceptance period will be rejected.

(f) The bidder agrees to execute all that it has undertaken to do, in compliance with its bid, if that bid is accepted in writing within (1) the acceptance period stated in paragraph (c) above or (2) any longer acceptance period stated in paragraph (d) above.

### 7. Small, Minority, Women-Owned Business Concern Representation

The bidder represents and certifies as part of its bid/ offer that it --

(a) ☐ is, ☐ is not a small business concern. "Small business concern," as used in this provision, means a concern, including its affiliates, that is independently owned and operated, not dominant in the field of operation in which it is bidding, and qualified as a small business under the criteria and size standards in 13 CFR 121.

(b) ☐ is, ☐ is not a women-owned business enterprise. "Women-owned business enterprise," as used in this provision, means a business that is at least 51 percent owned by a woman or women who are U.S. citizens and who also control and operate the business.

(c) ☐ is, ☐ is not a minority business enterprise. "Minority business enterprise," as used in this provision, means a business which is at least 51 percent owned or controlled by one or more minority group members or, in the case of a publicly owned business, at least 51 percent of its voting stock is owned by one or more minority group members, and whose management and daily operations are controlled by one or more such individuals. For the purpose of this definition, minority group members are:

(Check the block applicable to you)

☐ Black Americans
☐ Hispanic Americans
☐ Native Americans
☐ Asian Pacific Americans
☐ Asian Indian Americans
☐ Hasidic Jewish Americans

### 8. Indian-Owned Economic Enterprise and Indian Organization Representation (applicable only if this solicitation is for a contract to be performed on a project for an Indian Housing Authority)

The bidder represents and certifies that it:

(a) ☐ is, ☐ is not an Indian-owned economic enterprise. "Economic enterprise," as used in this provision, means any commercial, industrial, or business activity established or organized for the purpose of profit, which is at least 51 percent Indian owned. "Indian," as used in this provision, means any person who is a member of any tribe, band, group, pueblo, or community which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs and any "Native" as defined in the Alaska Native Claims Settlement Act.

(b) ☐ is, ☐ is not an Indian organization. "Indian organization," as used in this provision, means the governing body of any Indian tribe or entity established or recognized by such governing body. Indian "tribe" means any Indian tribe, band, group, pueblo, or

community including Native villages and Native groups (including corporations organized by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, which is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs.

**9. Certification of Eligibility Under the Davis-Bacon Act** (applicable to construction contracts exceeding $2,000)

(a) By the submission of this bid, the bidder certifies that neither it nor any person or firm who has an interest in the bidder's firm is a person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(b) No part of the contract resulting from this solicitation shall be subcontracted to any person or firm ineligible to be awarded contracts by the United States Government by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(c) The penalty for making false statements is prescribed in the U. S. Criminal Code, 18 U.S.C. 1001.

**10. Certification of Nonsegregated Facilities** (applicable to contracts exceeding $10,000)

(a) The bidder's attention is called to the clause entitled **Equal Employment Opportunity** of the General Conditions of the Contract for Construction.

(b) "Segregated facilities," as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(c) By the submission of this bid, the bidder certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The bidder agrees that a breach of this certification is a violation of the Equal Employment Opportunity clause in the contract.

(d) The bidder further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) prior to entering into subcontracts which exceed $10,000 and are not exempt from the requirements of the Equal Employment Opportunity clause, it will:

(1) Obtain identical certifications from the proposed subcontractors;

(2) Retain the certifications in its files; and

(3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods):

**Notice to Prospective Subcontractors of Requirement for Certifications of Nonsegregated Facilities**

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract exceeding $10,000 which is not exempt from the provisions of the Equal Employment Opportunity clause of the prime contract. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semiannually, or annually).

**Note:** The penalty for making false statements in bids is prescribed in 18 U.S.C. 1001.

**11. Clean Air and Water Certification** (applicable to contracts exceeding $100,000)

The bidder certifies that:

(a) Any facility to be used in the performance of this contract ☐ is, ☐ is not listed on the Environmental Protection Agency List of Violating Facilities:

(b) The bidder will immediately notify the PHA/IHA Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the Environmental Protection Agency, indicating that any facility that the bidder proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and,

(c) The bidder will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

**12. Previous Participation Certificate** (applicable to construction and equipment contracts exceeding $50,000)

(a) The bidder shall complete and submit with his/her bid the Form HUD-2530, "Previous Participation Certificate." If the successful bidder does not submit the certificate with his/her bid, he/she must submit it within three (3) working days of bid opening. Failure to submit the certificate by that date may render the bid nonresponsive. No contract award will be made without a properly executed certificate.

(b) A fully executed "Previous Participation Certificate"

☐ is, ☐ is not included with the bid.

**13. Bidder's Signature**

The bidder hereby certifies that the information contained in these certifications and representations is accurate, complete, and current.

_____ _____

(Signature and Date)

_____

(Typed or Printed Name)

_____

(Title)

_____

(Company Name)

(Company Address)

OMB Approval No. 2577-0157 (Exp. 01/31/2014)

# Certification of Payments to Influence Federal Transactions

**U.S. Department of Housing and Urban Development**
Office of Public and Indian Housing

Applicant Name

Program/Activity Receiving Federal Grant Funding

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, Disclosure Form to Report Lobbying, in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

I hereby certify that all the information stated herein, as well as any information provided in the accompaniment herewith, is true and accurate. **Warning:** HUD will prosecute false claims and statements. Conviction may result in criminal and/or civil penalties. (18 U.S.C. 1001, 1010, 1012; 31 U.S.C. 3729, 3802)

| Name of Authorized Official | Title |
|---|---|
| | |

| Signature | Date (mm/dd/yyyy) |
|---|---|
| | |

Previous edition is obsolete **form HUD 50071** (3/98)

ref. Handbooks 7417.1, 7475.13, 7485.1, & 7485.3

# CERTIFICATE AS TO CORPORATE PRINCIPAL

I, _____, certify that I am the _____ of the
(Name of Secretary of Corporation)

Corporation named as Principal in the within Bond; that _____
(Name of Signatory)

who signed the said bond on behalf of the Principal was then

_____ of said Corporation; that I know his signature, and his
(Title)

signature thereto is genuine; and that said Bond was duly signed, sealed, and attested to, for and in behalf of said Corporation by authority of its governing body.

_____
(Corporate Seal)

Signature Date Printed Name

# SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY
# CERTIFICATION REGARDING DRUG-FREE WORKPLACE REQUIREMENTS



A. The Southern Nevada Regional Housing Authority certifies that it will, or will continue to provide a drug free workplace by:

a) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

b) Establishing an ongoing drug-free awareness program to inform employees about:

(1) The dangers of drug abuse in the workplace;

(2) The grantee's policy of maintaining a drug-free workplace;

(3) Any available drug counseling, rehabilitation, and employee assistance programs; and

(4) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

c) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (a);

d) Notifying the employee in the statement required by paragraph (a) that, as a condition of employment under the grant, the employee will:

(1) Abide by the terms of the statement; and

(2) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

e) Notifying HUD in writing, within ten calendar days after receiving notice under subparagraph (d)(2) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number (s) of each affected grant;

f) Taking one of the following actions, within 30 calendar days of receiving notice under subparagraph (d)(2), with respect to any employee who is so convicted:

(1) Taking appropriate personnel action against such an employee, up to and Including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

Signature Date Printed Name

## SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY
## CERTIFICATION REGARDING DRUG FREE WORKPLACE REQUIREMENTS



(2) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency;

g) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (a),(b),(c),(d),(e), and (f).

B. The Grantee may insert in the space provided below the site(s) for the performance of work done in connection with the specific grant.

Place of performance (street, address, city, county, state, zip code)

By: _____
General Contractor

_____
ATTEST

# CERTIFICATIONS

I, _____, certify that I am the
(Name of Signatory or Officer of Contractor)

_____, of the Corporation
(Title)

named as "Contractor" herein, that _____,
(Name of Signatory)

who signed the Contract on behalf of the Contractor, was then _____
(Title)

of said Corporation; that said Contract was duly signed for and in behalf of said Corporation by authority of its governing body, and is within the scope of its corporate powers.

(Corporate Seal)

_____

_____

I HEREBY CERTIFY that to the best of my knowledge and belief, based upon observation and inquiry,

_____ who signed this Contract for the
(Name of Signatory)

_____, had the authority to execute the same,
(Name of Contractor)

and is the individual who signs similar Contracts on behalf of this Corporation and the public generally.

_____
John N. Hill, Executive Director

(This last certification must be made by the person who signed the Contract for the Southern Nevada Regional Housing Authority.)

# HUD INFORMATION BULLETIN 90-23



1. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT

   a. The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

   b. In the event of any claim or suit against the SNRHA on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed under this contract, the Contractor shall furnish to the SNRHA, when requested by the Contracting Officer, all evidence and information in possession of the contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the SNRHA except where the contractor has agreed to indemnify the SNRHA.

   c. The Contractor agrees to include, and require inclusion of, this clause in all subcontracts at any tier for supplies or services (including construction and architects-engineer subcontracts) and those for material, expected to exceed the Small Purchases threshold.

2. CLEAN AIR AND WATER CERTIFICATION

   The Contractor certifies that:

   a. Any facility to be used in the performance of this proposed contract is _____ / is not _____ listed on the Environmental Protection Agency List of Violating Facilities;

   b. The Offeror will immediately notify the Contracting Officer, before award, of the receipt of any communication for the Administrator, or a designee, or the Environmental Protection Agency, indicating that any facility that the Offeror proposed to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and

   c. The Contractor will include a certification substantially the same as this certification, including this paragraph (c) in every nonexempt subcontract.

3. CLEAN AIR AND WATER

   "Air Act," as used in this clause, means the Clean Air Act (42 U.S.C. 7401 et seq.).

   "Clean Air standards," as used in this clause, means:

   (1) Any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, work practices, or other requirements combined in, issued under, or otherwise adopted under the Air Act or Executive Order 11738.

   (2) An applicable implementation plan as described in Section 1109d of the Air Act (41 U.S.C. 7401d)

   (3) An approved implementation procedure or plan under section 111(c) or section 111(d) of the Air Act (42 U.S.C. 7411(c) or (d)); or

   (4) An approved implementation procedure under section 1129(d) of the Air Act (42 U.S.C. 7412(d))

# HUD INFORMATION BULLETIN 90-23



"Clean water standards," as used in this clause, means any enforceable limitation, control, condition, prohibition, standard, or other requirement promulgated under the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C.1342), or by local government to ensure compliance with pretreatment regulations as required by section 307 of the Water Act (33 U.S.C. 1317)

"Compliance," as used in this clause, means compliance with:

(1) Clean air or water standards; or

(2) A schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency, or an air or water pollution control agency under the requirements of the Air Act or Water Act and related regulations.

"Facility," as used in this clause, means any building, plant, installation, structure, mine, vessel or other floating craft, location, or site of operations, owned, leased, or supervised by a Contractor or subcontract, used in the performance of a contract or subcontract. When a location or site shall be deemed a facility except when the Administrator, or a designee, or the Environmental Protection Agency, determines that independent facilities are co-located in one geographical area.

"Water Act," as used in this clause, means Clean Water Act (33 U.S.C. 1251 et seq.).

b. The Contractor agrees:

(1) To comply with all the requirements of section 114 of the Clean Air Act (42 U.S.C. 7414) and section 308 of the Clean Water Act (33 U.S.C. 1318) relating to inspection, monitoring, entry, reports, and information, as well as other requirement specified in section 114 and section 308 of the Air Act and the Water Act, and all regulations and guidelines issued to implement those acts before the award of this contract;

(2) That no portion of the work as required by this prime contract will be performed in a facility listed on the Environmental Protection Agency List of Violating Facilities on the date when this contract was awarded unless and until the EPA eliminates the name of the facility from the listing;

(3) To use best efforts to comply with clean air standards and clean water standards at the facility in which the contract is being performed; and

(4) To insert the substance of this clause into any nonexempt subcontract, including this subparagraph(b)(4).

4. ENERGY POLICY AND CONSERVATION ACT

The Contractor must meet the mandatory energy efficiency standards as required by the Energy Policy and Conservation Act (Pub.L.94-16). The "Covered product" shall meet the highest energy efficiency requirements in accordance with industry performance standards. "Covered product" means a consumer product such as central air conditions, freezers, furnaces, and water heaters. Copies of standards can be obtained from the list identified in the SNRHA's project manual, dated December 1989, page 01090-4 under the trade association names and titles section.

# SPECIAL CONDITIONS

1. PROJECT SITE(S)

   (1) **JONES GARDENS – 1750 MARION DRIVE, LAS VEGAS, NV. 89115**

2. TIME FOR COMPLETION

   A. The total project shall be completed within **120 calendar days** and in accordance with approved construction schedule**.**

   B. Completion shall be further defined as "Substantial Completion" of the work in progress to include but not limited to:

      1. All **final inspections** and **Certificate of Occupancy** Inspections (if applicable) are approved by City/County Building Officials, Water District, Sanitation District, Fire Department, Public Work and/or State of Nevada **as required and by any other agency having jurisdiction over the project.**

      2. Minor punch-list items.

      3. If the work does not require a permit from a local jurisdiction, only **minor punch-list items** will be considered for work remaining. Minor punch-list items shall be defined as: adjusting components, touch up paint, minor clean-up, not to include **hauling debris away from the site**, etc.

   C. **When a project is declared "Substantially Completed,"** the only work left to complete will be **minor punch-list items**.

   D. The contractor shall notify the Housing Authority in writing when the job is considered substantially complete and the requirements in **item 2.B. of this document** have been met. Lack of written notification will result in the accrual of contract time until written notice is received.

   E. The Housing Authority must have the concurrence of the Engineer/Professional of Record before the job is considered "Substantially Complete."

   F. Final payment application (10% retention) can not be released until the punch-list has been completed and all close-out documents have been received and approved by the Housing Authority.

3. LIQUIDATION DAMAGES

   As actual damages for any delay in completion are impossible to determine, the Contractor and his sureties shall be liable for and shall pay to the SNRHA**, the sum of $100 per dwelling unit per day in addition to $100 per non-dwelling unit per day in addition to $100 per site per day,** as fixed, agreed and liquidated damages for each calendar day of delay until the work is completed and accepted.

4. COMMUNICATIONS

   (a) All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.

   (b) Any notice to or demand upon the contractor shall be sufficiently given if delivered at the office of the contractor stated on the signature page of the Contract or at such other office as he may from time to time designate in writing to the SNRHA or deposited in the United Stated mail in a sealed postage-prepaid envelope, or if delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

# SPECIAL CONDITIONS

(c) All papers required to be delivered to the SNRHA or architect shall, unless otherwise specified in writing to the contractor, be delivered to the SNRHA and any notice to or demand upon the SNRHA or architect shall be mailed in a sealed, postage-prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to the SNRHA at such address, or to such other representatives of the SNRHA or to such other address as the SNRHA may subsequently specify in writing to the Contractor for such purpose.

(d) Any such notice shall be deemed to have been given as of the time of actual delivery; or, in the case of mailing, when the same should have been received in due course of post; or, in case of telegrams, at the time of actual receipt.

5. JOB OFFICES

(a) The Contractor must designate an area to serve the posting requirements of this contract. A board (4 X 8) must be in plain view in a well-trafficked area at each site. On this board will be posted EEO and wage information in compliance with the General Conditions of this contract.

(b) For all jobs over $500,000, the Contractor shall furnish and maintain, during construction of the project, adequate facilities at the site to be designated by the SNRHA for the use of the SNRHA and the Architect, as follows: Development/Modernization Director will state the need.

(c) The Job Office shall include office space of approximately 12' X 12' with light, heat, cold water, toilet facilities, janitor's service, local telephone, plan tables and plan racks, a desk, chair and one four-drawer file cabinet. The Contractor may, at his option, furnish a Job Office trailer that specifically has been designed for that purpose. The trailer, if used, shall be subject to approval by the SNRHA.

(d) The Contractor and his subcontractors may maintain such office and storage facilities on the site as may be necessary for the proper conduct of the work. These shall be located so as to cause no interference with any work to be performed on the site. The Architect shall be consulted with regard to locations.

(e) Upon completion of the project, or as directed by the SNRHA or Engineer, the Contractor shall remove all such temporary structures and facilities from the site, same to become his property, and leave the premises in the condition required by the Contractor.

6. MINIMUM RATES OF PAY

A schedule of the minimum rates of pay applicable to this Contract is attached.

7. EQUIPMENT FURNISHED BY OTHERS

(a) The following equipment will be furnished by others but installed by the Contractor:

not applicable

(b) The Contractor shall, at his expense and risk, unload and install equipment, and do any necessary hauling to the places for installation. The Contractor shall furnish the SNRHA with a schedule of his need for equipment sufficiently of such need to enable the SNRHA to obtain delivery under the procurement contracts.

# SPECIAL CONDITIONS

(c) Where the type of equipment requires rough-in dimensions, the Engineer or SNRHA will furnish them to the Contractor as soon as available.

(d) When equipment arrives at the delivery point, the Contractor shall promptly unload and transfer it to the project site, unless otherwise permitted or directed. The equipment shall not be unloaded except in the presence of a representative of the SNRHA with whom the Contractor shall jointly determine what, if any, damage has occurred in transit, and the responsibility therefore. Turnover of the equipment to the Contractor shall then be formalized by means of a transfer receipt, executed in triplicate, signed by the representatives of the Contractor and the SNRHA. This document shall show all particulars of the shipment it covers, the number and condition of the items turned over to the Contractor shall be fully responsible for the equipment.

(e) The Contractor shall inspect all equipment items for latent defects or concealed damage and for shortages, and immediately report all such discrepancies to the SNRHA so that correction or replacement can be obtained.

(f) The provision to "install" as used in paragraph 7.b. above, covers all operations and materials in connection with this equipment necessary to (1) distribute; (2) uncrate; (3) assemble as may be normally necessary; (4) place in permanent position; (5) connect up; and (6) clean up.

(g) The Contractor shall deliver all such equipment in whole and satisfactory operating condition. He shall be responsible for actions and costs applicable to final testing, adjusting, and checking for proper performance.

8. PERFORMANCE AND PAYMENT BONDS

The company providing the required performance and payment bonds must be listed in U.S. Treasury Circular No. 570 as a surety approved to issue bonds securing Government contracts in the State of Nevada.

# ADDITIONAL CLAUSES AND REQUIREMENTS

1. Contract Change Procedures:

a. **Modifications:**

Changes in the work may be accomplished after execution of the contract for construction, if approved by the SNRHA and provided in the Agreement Between Owner and Contractor, and without invalidating the Contract for construction, by Supplemental Instruction or by Change Order, subject to the limitations stated in this Section and elsewhere in the Contract documents.

(1) A **Modification** is a:

(1.a.) **Supplemental Instruction**: Is an order for a minor change in the work issued by the Architect/Professional, involving no changes in the contract amount or contract time, and or a

(1.b.) **Change Order**: Is a written instrument prepared by the Owner and signed by the Owner, contractor and Architect/Professional, stating their agreement upon a change in the work, which results in a change in the Contract time and/or Contract amount.

(2) Changes in the work shall be performed under applicable provisions of the Contract documents and the Contractor shall proceed promptly, unless otherwise provided in the Supplemental Instruction or Change Order.

(3) If the unit prices are stated in the Contract documents or subsequently agreed upon, and if quantities originally contemplated are so changed in a proposed Change Order that application of such unit prices to quantities or work proposed will cause substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

(4) The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract sum shall be actual net cost as confirmed by the Owner.

b. **Supplemental Instructions:**

The Architect/Professional has the authority, with the approval of the Owner, to order minor changes in the work not involving adjustment in the Contract sum or extension of the Contract time and not inconsistent with the intent of the Contract documents. Such changes shall be affected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

c. **Changes Orders:**

(1) **Change Order Request**: The Architect/Professional may request a Change Order Request (COR) from the Contractor, which includes a detailed description of a proposed change in the work, with or without supplementary or revised drawings and specifications. Within seven (7) calendar days of the request, the Contractor shall submit the COR to the Architect/Professional, with a statement describing the reasons for the change and the effect on the Contract amount and Contract time, with full documentation. The Contractors COR will include a description of the effect on work separate or other contractors. After review, the Architect/Professional will submit the COR to the Owner, with recommendations. If necessary, the Change Orders costs will be negotiated between the Contractor and Owner, prior to final approval.

(2) **Change Order:** When the Owner and Contractor agree with the adjustments in the Contract amount and Contract time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and shall be recorded in the Change Order prepared by the Owner and executed by all parties.

(3) **Change Order Procedures:** The Contractor will submit proposals and/or billings for materials and/or labor for all additional work in strict conformance with all provisions, rates and requirements as set forth in the Prevailing Wage Rates outlined in the Construction Contract Documents. The Contractor will submit proposals and/or billings for materials and/or labor with charges limited to those set forth below:

(3.1) **Materials:**

a. The cost of products or materials to the Contractor or Subcontractor less any applicable trade discount shall be subject to mark-up for overhead and profit, of ten percent (10%).

b. The Owner reserves the right to request copies of any or all invoices or contracts, including those from the originating suppliers, subcontractors or manufacturers.

c. No overhead and profit will be allowed on taxes.

(3.2) **Labor:**

a. The General Contractor will be allowed to add a maximum of fifteen percent (15%) overhead and profit in the Change Order labor cost.

b. Contractor and Subcontractor labor costs shall be based on current (at time of advertising for bid) prevailing wages rates as approved by the Department of Housing and Urban Development, Labor Relations Department.

(3.3) No additional overhead and profit will be allowed for omitting work. When both additions and credits covering related work or substitutions are involved in any one change, the allowance for overhead and profit shall be figured on the basis of the net increase, if any, with respect to that change.

(3.4) Any change order submitted that does not meet the above requirements will not be considered by the SNRHA.

d. **Execution of change orders:** A Change Order will be fully executed by the Owner after the document is signed by the Contractor and the Architect/Professional.

(1) Pending full execution of change order, the Contractor may included approved amounts in the Applications for Payment.

2. Claims for Adjustments and Disputes:

a. Any controversy or claim, excepting artistic effect as generally accepted in the industry, arising out of or relating to the bid process or the performance of a contract, which cannot be resolved by mutual agreement or the protest procedures (including administrative appeal) contained herein, shall, pursuant to NRS 338.150, be settled by arbitration as administered by the Nevada Arbitration Association, at Las Vegas, Nevada, as follows:

(1) If the value of the protest, dispute, intended award or contract is less than $50,000, the dispute shall be settled according to the STREAMLINED ARBITRATION RULES of the Nevada Arbitration Association.

(2) If the value of the protest, dispute, intended award or contract is more than $50,000, the dispute shall be settled according to the CONSTRUCTION, COMMERCIAL AND VOLUNTARY ARBITRATION RULES of the Nevada Arbitration Association. Judgment upon the award rendered by; the arbitrators may be entered into any court having jurisdiction thereof.

b. In the event that any controversy or claim arising out of or relating to the performance of the bid becomes the subject or arbitration, the Southern Nevada Regional Housing Authority (SNRHA) shall have the right, at its option, to join or bring in any additional party to the arbitration proceeding, and the bidder hereby irrevocably consents and agrees to such joinder.

c. In the event that the SNRHA is named a party to any arbitration action arising out of, or resulting from the purchase and/or delivery of the services/items specified in this bid, the bidder hereby agrees, at the request of the SNRHA, to be joined as a party to the arbitration proceeding and to be bound by any decision resulting from arbitration.

d. None of the time provisions imposed apply to the joinder rights provided herein in such a way as to preclude the SNRHA from joining the bidder as a party to any arbitration proceeding in which it is named and which arises out of, or results from, the purchase and/or delivery of the services/items specified in this bid.

e. In order for the bidder to be able to arbitrate any claim, dispute or other matter in question between the parties, written notice must be given to the SNRHA within thirty (30) calendar days after the claim, dispute or other matter arises. In order for the SNRHA to be able to arbitrate any claim, dispute or other matter in question between the parties, written notice must be given to the bidder within sixty (60) calendar days after the claim, dispute or other matter arises. The purpose of such notification is to place the other party on notice so that proper measures can be taken to properly defend against such claim, dispute or other matter, and the failure to give such notice shall preclude the party desiring arbitration from subsequently arbitrating that particular claim, dispute or other matter.

f. The filing of this written notice shall preserve that party's right to arbitrate, but shall not obligate the party to proceed with arbitration. In the event that either party desires to proceed with the arbitration of a claim, dispute, or other matter with respect to which such notice has been given, a written demand for arbitration shall be filed in writing with the other party within sixty (60) calendar days after the ending of the contract, and failure to make such demand shall forever bar such claim from being arbitrated.

g. In the event of arbitration, it is agreed by the parties that all means of discovery, including but not limited to depositions and interrogatories, will be afforded to the parties involved in the arbitration, and the appointed arbitrator(s) shall have all authority to impose sanctions against either party for failing to comply with the rules for discovery provided under the Nevada Rules of Civil Procedure.

h. Within ten (10) calendar days after written receipt by either party of the other's intention to arbitrate, both parties shall each select an arbitrator of their own choosing which shall be uncontestable by the other party.

I. The two-(2) uncontestable arbitrators shall attempt to select a third arbitrator who shall be as neutral as unmanly possible. The third arbitrator should not be actively involved in an industry directly involved in the items, materials or services to be purchased under this contract. The background of the third arbitrator should be of broad general business, preferably in a senior management position.

j. If a third suitable arbitrator cannot be found by the two uncontestable arbitrators within fifteen (15) calendar days after the first being selected, then either party may, in writing, make application to the Eighth Judicial District Court in accordance with NRS 38.005 for an appointment of the third arbitrator.

k. Upon appointment of the third arbitrator, all three (3) arbitrators shall commence within five (5) calendar days after that appointment to commence reaching a determination of the dispute, under the applicable industry rules of the American Arbitration Association.

l. The award rendered by the arbitrator(s) shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

m. If the contract is still in force, the contractor shall carry the work and maintain progress during any arbitration, court proceedings or other disputes excluding those contained in this section, unless otherwise mutually agreed upon in writing. The arbitration shall be conducted in accordance with all Bid Documents.

3. Default:

The SNRHA may, subject to the provisions outlined below, terminate the whole or any part of the contract in any one of the following circumstances, by written thirty-(30) calendar day's notice of default to the contractor:

(1) If the contractor fails to perform the service(s) within the time specified herein or any extension thereof; or

(2) If the contractor fails to perform any of the provisions of the contract, or so fails to make progress as to endanger performance of the contract in accordance with its terms, and in either of these two circumstances does not cure such failure within the requirements set forth in the Bid Documents; or

(3) In the event the contractor is unable to tender performance on the date, time, and location specified by the SNRHA, the contractor agrees to pay the SNRHA an amount equal to the actual costs incurred by the SNRHA in replacing the contractor's services. Indemnification shall be made for the time the contractor fails to perform under the terms and conditions of the contract. In addition to the above payments, damages arising from the contractor's failure to perform will apply in all cases except where failure to perform arises out of causes beyond the control and without fault or negligence of the contractor.

(4) Except with the respect to defaults of the subcontractors, the contractor shall not be liable for any excess costs if the failure to perform the contract arises out of causes beyond the control without the fault or negligence of the contractor. Such causes may include, but are not limited to, acts of God or of the public enemy, acts of the SNRHA, in either its sovereign or contractual capacity, acts of the Federal, State or local governments in their sovereign capacity, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault of the contractor.

(5) If the failure to perform is caused by the default of a subcontractor, and if such default arises out of causes beyond the control of both the contractor and subcontractor, and without the negligence of either of them, the contractor shall both be liable for any excess costs for failure to perform, unless the supplies or services to be furnished by the subcontractors were obtainable from other sources in sufficient time to permit the contractor to meet the required delivery and/or installation schedule.

4. Termination For Convenience of the SNRHA:

a. The performance of work under the contract may be terminated by the SNRHA in whole or in part from time to time, upon at least a thirty (30) calendar day written notice to the contractor or successful bidder when such action is deemed by the SNRHA to be in its best interest. Termination of work shall be affected by delivery to the contractor of a Notice of Termination specifying the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective.

b. After receipt of the Notice of Termination and except as otherwise directed by the SNRHA, the contractor shall:

(1) Stop work under the contract on the date and to the extent specified in the Notice of Termination.

(2) Complete performance of such part of the work as shall not have been terminated by the Notice of Termination.

c. After receipt of a Notice of Termination, contractor shall submit to the SNRHA, in the form and with the certification as may be prescribed by the SNRHA, a termination claim and invoice.

d. Such claim and invoice shall be submitted promptly, but not later than thirty (30) days from the effective date of termination. Upon failure of contractor to submit his/her termination claim and invoice within the time allowed, the SNRHA may determine on the basis of information available to the SNRHA, the amount, if any, due the contractor in respect to the termination, and such determination shall be final. After such determination is made, the SNRHA shall pay the contractor the amount determined.

e. The contractor, for a period of five (5) years after the final settlement under the contract, shall make available to the SNRHA, at all reasonable times, at the office of the contractor, all his books, records, documents, or other evidence bearing on the costs and expenses of the contractor, under the contract in respect to the termination of the work.

5. Notification:

a. Notices to the contractor shall be addressed to his/her place of business as designated on the Form of Bid, or such other place as may be designated in writing by the contractor.

b. Unless otherwise specified in the Technical Specifications, notices to the SNRHA shall be addressed to:

Southern Nevada Regional Housing Authority

Ms. Amparo Gamazo
Development/Modernization Director
340 N. 11th Street, Suite 150
Las Vegas, NV 89101-3611
Telephone: (702) 922-6060 or (702) 922-6071■ Fax: (702) 922-6080 ■ TDD: (702) 387-1898

c. In the event of suspension or termination of the contract, the notices may also be given by the SNRHA upon personal delivery to any person whose action or knowledge of such suspension or termination would be sufficient notice to the contractor.

6. Delays and Time Extensions: The contractor is responsible for completing the work within the time established in the contract. The SNRHA is responsible for monitoring the contractor to ensure that wok will be completed as scheduled. The SNRHA may authorize justifiable time extensions without prior HUD review and approval, unless the SNRHA is subject to prior HUD approval under a HUD-established threshold that is less than the requested amount. The "Default" clause on the forms HUD-53700, 5370-C and 5370-EZ prescribe the conditions under which a time extension may be granted. The basic principle is that delays arising from unforeseeable causes beyond the control and without the fault or negligence of the contractor may be grounds for allowing a time extension. Such time extensions should be formalized in a written modification to the contract.

7. Time Extension Criteria: In order to be considered for approval by the SNRHA, requests for time extensions should meet the following criteria:

a. The contractor should submit a written notice to the SNRHA within (10) calendar days of the start of any delay;

b. The severity and extent of adverse weather could not have been reasonably foreseen by the contractor (normal seasonal levels of rain, snow, cold or heat should have been considered by the contractor); and

c. The cause of the delay was beyond the contractor's control.

8. Documentation: Immediately upon receipt of the contractor's notification of delay or request for time extension, the SNRHA shall send a letter of acknowledgement to the contractor. The letter will indicate that either: (1) immediate consideration will be given to the contractor's request or (2) the actual delay in work is difficult to determine and consideration will be given to the contractor's request upon completion of work.

SNRHA staff will review the records to ensure that the information provided by the contractor is accurate and complete. This will allow the Contracting Officer to determine the cause of the delay and the extent that it was within the Contractor's control. It will also determine if the request meets the contract's criteria for approving or rejecting the request for a time extension. Two criterion for approval of time extension request follow:

a. The contractor's request, as documented by the SNRHA "finding of fact," meets the requirements stated in "Documentation" above, and

b. The additional time requested by the contractor is reasonable based on the nature and duration of the delay.

9. Liquidated Damages for Failure to Perform:

a. The SNRHA depends upon the availability and functionability of the services and/or materials as outlined in the Bid Documents for the purposes of conducting necessary business.

b. It is virtually impossible to accurately define the exact amount of financial loss the SNRHA would incur if the services and/or materials as outlined in the Bid Documents become unavailable for use. However, the SNRHA should not be subject to financial indebtedness if in fact the services and/or materials as outlined in the bid are not provided.

c. Criteria for the contractor's failure to perform and the liquidated damages to be addressed are indicated below:

(1) Unavailability of the services and/or materials as defined as not being delivered for the SNRHA business use within the time the contractor promises the services and/or materials will be available.

(2) Acts of God is the only reason that may excuse the contractor from being assessed liquidated damages.

(3) Unless otherwise identified within the Bid documents, the amount of liquidated damages to be assessed shall be **the sum of $100.00 per dwelling unit per day, $100.00 per non-dwelling unit per day and $100.00 per site per day**. The final amount shall be deducted from the contractor's monthly billing for services and/or materials up to a maximum of the total monthly amount of service. If billing is not handled on a monthly basis, the amount due to the SNRHA may be subtracted from any billing invoice submitted to the SNRHA for payment by the contractor.

10. Joinder Privileges - N.R.S. 332:

a. Pursuant to Nevada Revised Statute 332.195, the State of Nevada and/or any political subdivision within the State of Nevada may be granted the privilege of joining the awarded contract, at the option of the successful bidder ONLY. If the successful bidder so grants such a privilege, the terms and conditions of the Bid Documents may be passed on to the joining political subdivision by the successful bidder.

b. The successful bidder shall retain the unilateral right to allow or disallow any political subdivision the privilege of joining the awarded contract. In the event the successful bidder allows another political subdivision o joint the SNRHA contract, it is expressly understood that the SNRHA shall in no way be liable for the joining political subdivision obligations to the successful bidder in any manner whatsoever.

11. Billing Method:

Billings for services and/or materials awarded under the provisions of the Bid Documents will commence on the day on which such services and/or materials are activated and used by the SNRHA. Services shall be provided and billed as instructed in the Technical Specifications.

12. Disputed Billings (Charges):

In the event that the SNRHA disputes any portion of the billing(s), the SNRHA shall obey the undisputed portion of such billing and initiate the dispute-resolving procedures, as follows:

(1) Should the SNRHA dispute a portion of any of its billing(s), its representative shall, within thirty (30) calendar days after the SNRHA's receipt of such billing, informally notify the contractor's designated representative that such dispute exists. Such dispute shall be resolved in accordance with the contractor's customary informal dispute resolution process.

(2) If such dispute cannot be resolved by the contractor's customary informal dispute resolution process, within ten (10) calendar days after such notification is given, the SNRHA's Purchasing Agent and the contractor's local Manager shall meet to discuss the matter.

(3) If the SNRHA Purchasing Agent and the contractors local Manager are unable to resolve the dispute through such discussion within ten (10) calendar days, the SNRHA shall, within ten (10) calendar days thereafter, either:

(a) Pay the disputed charges and reserve the right to submit the matter to arbitration, as called for under Section D., Paragraph 1., Claims For Adjustments and Disputes.

(b) Not pay the disputed charge and submit the matter to arbitration, as referred to in the preceding paragraph above.

(4) As stated previously, the decision from arbitration will be binding upon both parties. If the decision is adverse to the SNRHA, the SNRHA shall pay the amount, which is ordered, to the contractor within ten (10) calendar days after the SNRHA's receipt of the decision. If the decision is in favor of the SNRHA, the contractor will either; (a) clear the amount which is ordered from the SNRHA account, or (b) repay to the SNRHA the amount ordered; either option within ten (10) calendar days after the contractor's receipt of decision.

13. Non-Escalation:

Unless otherwise specified in the Technical Specifications, the unit prices reflected on the Form of Bid shall remain firm with NO provision for price increases during the term of the contract.

14. Funding Restrictions and Order Quantities:

The SNRHA reserves the right to reduce or increase estimated or actual quantities in whatever amount necessary without prejudice or liability to the SNRHA, if:

(1) Funding is not available.

(2) Legal restrictions are placed upon the expenditure of monies for this category of service or supplies; or,

(3) The SNRHA's requirements in good faith change after award of the contract.

15. Licensing, SIIS, Insurance Permits:

a. At the time of bid award, all prospective bidders shall be duly licensed in accordance with all applicable statutes/codes of the State of Nevada and the City and County having jurisdiction.

b. A City and County business license allowing the prospective bidder to conduct and/or supply the services and/or materials described in these Bid Documents shall also be required of all prospective bidders at the time of bid award (proof of pending applications is acceptable)

c. Should the successful bidder intend to sublet portions of the work (if expressly allowed by the SNRHA), it shall be the responsibility of the successful bidder to insure that all sub-bidders also be properly licensed in accordance with the aforesaid State statutes and City codes.

d. At the time of bid submittal, prospective bidders utilizing employees shall be duly registered with the State of Nevada Industrial Insurance System (SIIS) and the State of Nevada Employment Security Department and shall be current in their payments and coverage for both. Award cannot be made to any apparent successful bidder unless he/she meets this requirement. It shall be the responsibility of the successful bidder to ensure that all sub-bidders also meet this requirement.

**NOTE**: Copies of the above named documents (City and County business license; State of Nevada SIIS and State Employment Certificates of Coverage; and other local, State, County or Federal licenses or certifications as may be required for this bid) will be required from the successful bidder before award can be made. Failure to submit these documents shall cause that bidder not to be considered for Award.

e. Prior to contract approval and up to project acceptance by the owner, the successful bidder shall furnish at its own expense to the SNRHA a certificate of insurance evidencing that Builder's Risk (fire and extended coverage) insurance on all work in place and/or materials stored at the building sites(s). The SNRHA's existing fire and extended coverage policy may not be endorsed for any work under this contract.

As detailed with in the Conditions/Specifications, insurance coverage that may include all or part of the following: Comprehensive General Liability Insurance to include Premises-Operations, Products/Complete Operations, Blank Contractual Liability with Extended Liability Coverage, Broad Form Property Damage. Insurance coverage from the firm's liability insurance carrier(s) indicating the Housing Authority as an "Additional Insured," (minimum of $1,000,000. each occurrence, general aggregate minimum limit of $2,000,000.); General Liability Fire Damage insurance of at least $50,000. Medical pay insurance reflecting a minimum of $5,000. Firm must submit insurance certificate addressed to the SNRHA for their Worker's Compensation Insurance (NOTE: not required from firms that have only (1) employee and will not employ any other employee to work on the SNRHA property). **Please note that all insurance coverage should have a $1,000.00 deductible.**

(1) Automobile Liability Insurance combined single limit of $1,000,000.00. **All insurance coverage shall have a $1,000.00 deductible.**

Before the Award of Bid, the successful bidder shall provide to the SNRHA Dev/Mod Director, insurance certificates addressed to the SNRHA certifying (1) and (2) above. Such binders insurance will afford at least sixty (60) days written notice reference cancellation to the SNRHA Dev/Mod Director, at Post Office Box 1897, Las Vegas, Nevada 89125. Failure by the successful bidder to submit such documents as instructed shall, at the discretion of the SNRHA Dev/Mod Director, allow that bidder to be eliminated from consideration for the award of Bid and allow the SNRHA to make Award to the next lowest bidder, as long as he/she are able to comply with the Specifications and requirements of the Bid.

f. Unless otherwise stated in the Bid Documents, all local, City or County, State or Federal permits which may be required by this bid, whether or not they are known to either the SNRHA or the bidders at the time of Bid Opening or Bid Award, shall be the sole responsibility to the successful bidder, and any bid sums submitted on the Form of Bid shall reflect all costs required by the successful bidder to procure and provide such necessary permits.

16. Taxes:

All persons doing business with the SNRHA should be aware that the SNRHA is exempt from paying Nevada State Sales and Use Taxes and Federal Excise Taxes. **This tax exemption status is not extended for use by professional or contractors**. A letter of Tax Exemption will be provided to the successful bidder upon request.

17. State Statutes:

Prospective bidders are advised they must observe all State and Federal statutes regarding minimum wage rates, NRS 338, equal employment opportunity, Copeland Anti-Kickback Act, etc. Each and every provision of Chapter 332 of the NRS and other laws required to be inserted in these Bid Documents shall be deemed to be inserted herein and finalized contract shall be read and enforced as though it were included therein, and if through mistake or otherwise any such provision is not inserted, or is not correctly inserted, then upon the application of either party the contract shall be physically amended to make such insertion or correction

18. Government Standards:

It is the responsibility of the prospective bidder that all items and services submitted for bid conform to all local, State, and Federal law concerning safety (OSHA and NOSHA) and environmental control (EPA and Clark County Pollution regulations). The successful bidder shall be responsible for all costs incurred for compliance with these possible ordinances, requirements or laws. No time extensions shall be granted or financial consideration given to the successful bidder for time or monies lost due to violations of these regulations.

19. Freight On Bill and Delivery:

a. All bid prices submitted shall reflect the cost of delivering the bidded services and/or materials to the location(s) specified within the Bid Documents or on the contract.

b. The successful bidder agrees to deliver to the designated location(s) on or before the date as specified in the finalized contract. Failure to deliver on or before the specified date constitutes an event of default by the successful bidder. Upon default, the successful bidder agrees that the SNRHA may, at its option, rescind the finalized contract under the DEFAULT CLAUSE of these Instructions and seek compensatory damages as provided by law.

20. Backorders:

The SNRHA Development/Modernization Coordinator or his/her designated alternate, must be notified within five (5) calendar days of all backordered materials and/or incomplete services, and the estimated date delivery and receipt is to be made. Unless otherwise stipulated in the contract, any order that will take over a maximum of fourteen (14) days past the original agreed upon delivery date may, at the option of the SNRHA, be canceled and ordered from another source, if, in the opinion of the SNRHA Development/Modernization Director, it is in the best interest of the SNRHA to do so.

21. Contract Extension:

Unless otherwise stated within the Bid Documents, the SNRHA shall retain the right to, at the end of the original contract, extend the contract up to a maximum of the length of the original contract (i.e.: 1 year original contract = 1-year possible maximum extension of same contract). This shall be possible only if the successful bidder agrees not to raise any individual or total bid sums, unless the original contract sums were allowed to change based on a Price Adjustment Provision contained in the original contract; and that no other changes may be made to the original agreement, except at the SNRHA's discretion.

22. Literature:

Prospective bidders may be required to furnish, either as part of their sealed bid or at another specified time during the bid, specification sheets, brochures, product literature, or other such materials which contain sufficient data to enable the SNRHA staff to properly evaluate the items being submitted for bid consideration. Failure to enclose such data, if required, may cause rejection of that bid without consideration. If the prospective bidder has a question as to whether or not such materials should be submitted, if shall be their responsibility to make inquiry of the SNRHA Development/Modernization Director.

23. Training:

If requested by the SNRHA, the successful bidder shall provide a qualified factory-trained instructor for up to eight (8) hours or more of theory and practical instruction. The training shall be equivalent to that provided to the manufacturer's field service personnel. NOTE: This paragraph applies mainly to bids concerning machinery and equipment; however, shorter instruction periods may be required for other items. The required instruction time may be specified in the Technical Specifications.

24. Instruction Manuals:

If requested by the SNRHA, the successful bidder shall furnish, at no additional cost to the SNRHA, two (2) complete instruction manuals and parts breakdowns upon delivery of the bidded items.

25. Communication:

If during the period of the contract it is necessary that the SNRHA place toll or long distance telephone calls or telegrams in connection therewith (for complaints, adjustments, shortages, failure to deliver, etc.), it is understood that the successful bidder will bear the charge or expense for all such calls/telegrams.

26. Work On Authority Property:

If the successful bidder's work under this bid involves operations by the successful bidder on SNRHA premises, the successful bidder shall take all necessary precautions to prevent the occurrence of any injury to persons or property during the progress of such work, and except to the extent that any such injury is caused solely and directly by the SNRHA's negligence, shall indemnify the SNRHA, and their officers, agents, servants and employees against all loss which may result in any way from any act or omission of the successful bidder, its agents, employees, or subcontractors; and the successful bidder shall maintain such public liability, property damage and employer's liability and compensation insurance as will protect the SNRHA from said risks and from any claims, any applicable workmen's compensation and occupational disease acts.

27. Estimated Quantities:

Unless otherwise indicated the quantities reflected on the Bid Documents, to the best of the SNRHA's knowledge, reflect projected consumption date. These quantities are not meant to infer or imply actual consumption figures or quantities that will be purchased by the SNRHA under the finalized contract; but, pursuant to all Bid Documents, these quantities will be used to determine the successful bidder.

28. Record Retention and Inspection:

a. The successful bidder agrees that the SNRHA or any duly authorized representative shall have access to and the right to examine, audit, excerpt, copy or transcribe any pertinent transaction, activity, time cards, or other records relating to this proposed contract. Such material, including all pertinent costs, accounting, financial records and proprietary data, must be kept and maintained by the contractor in a location within Clark County, Nevada, for a period of five (5) years after completion of this contract unless the SNRHA's written permission is obtained to dispose of said materials prior to this time.

b. If, at any time during the term of the contract, or at any time after the expiration or termination of the contract, authorized representatives of the SNRHA conduct an audit of the contractor's records regarding the service provided to the SNRHA, and if such audit finds the SNRHA's dollar liability for such service is less than payments made by the SNRHA to the contractor; then the contractor agrees that the difference shall be either; (1) repaid immediately by the contractor to the SNRHA by cash payment, or (2) at the SNRHA's option, credited against any future payment to the contractor.

29. Warranty:

a The services/materials provided under this bid shall conform to all information contained within these Bid Documents as well as all applicable Industry Published Technical Specifications, and if one of the above mentioned Specifications contain more stringent requirements than the other, the more stringent requirements shall apply.

b. Unless otherwise indicated in the Technical Specifications, all materials, workmanship and title shall be guaranteed by the successful bidder to be free of defects for a period of one (1) calendar year form the date of acceptance by the SNRHA.

c. All freight cost incurred for shipment to and from the contractors designated place of business to correct warranty defects during the warranty period shall be borne by the successful bidder.

d. The liability of the successful bidder to the SNRHA (except as to title) arising out of the furnishing of the goods and/or services or of its use under the terms of the contract shall not exceed the correcting of the defect(s) in the goods and/or services as provided under the contract, and upon expiration of the warranty period all such liability shall terminate EXCEPT UNDER THE WARRANTY FOR MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

30. Warranty Exclusions Prohibited:

a. The SNRHA will NOT accept any warranty clause from either the successful bidder or from a manufacturer, which states:

(1) That the warranty of merchantability and/or the warranty of fitness for a particular purpose is excluded from the offer to the SNRHA.

(2) That the manufacturer's and/or successful bidders warranty is in lieu of all other warranties that are either expressed or implied.

b. In addition to the above restrictions, the warranty requirements of the Bid Documents shall run from the manufacturer to the SNRHA as well as from the successful bidder to the SNRHA if the goods/services are sold by a distributor or agent.

31. Correction of Warranty Defects:

a. If required by the Bid Documents, the successful bidder shall, within five (5) calendar days after the Bid Opening and prior to the delivery of the goods and/or services, appoint a firm in the immediate Las Vegas area of his/her own choosing who will be the immediate contact point for the correction of warranty defects.

b. Unless otherwise stated in the Conditions/Specifications, the local firm shall address and correct any warranty defects within twenty-four (24) hours of notification. Any warranty defect that requires more than twenty-four (24) hours to correct shall require the direct intervention by the successful bidder and must be corrected within ten (10) calendar days after notification by the SNRHA.

c. Failure to comply with the requirements of the provisions of this provision (No. 27) shall be just cause for the SNRHA declaring the contract in default under the Default Clause of these Instructions, and shall allow the SNRHA to seek remedy at law.

32. Official, Agent and Employees of the SNRHA Not Personally Liable:

It is agreed by and between the parties hereto that in no event shall any official, officer, employee, or agent of the Southern Nevada Regional Housing Authority, in any way be personally liable or responsible for any covenant or agreement herein contained whether expressed or implied, nor for any statement, representation or warranty made herein or in any connection with this agreement.

33. Subcontractors:
Unless otherwise stated within the bid documents, the successful bidder may not use any subcontractors to accomplish any portion of the services described within the Technical Specifications without the prior written permission of the SNRHA's Development/Modernization Coordinator.

34. Salaries and Expenses Relating to the Successful Bidders Employees:

Unless otherwise stated within the Bid Documents, the successful bidder shall pay all salaries and expenses of, and all Federal, Social Security taxes, Federal and State Unemployment taxes, and any similar taxes relating to its employees used in the performance of this contract. The successful bidder further agrees to comply with all Federal, State and local wage and hour laws and all licensing laws applicable to its employees or other personnel furnished under this agreement.

35. Attorney's Fees:

In the event that litigation is commenced by one party hereto against the other in connection with the enforcement of any provision of this agreement, the prevailing party shall be paid by the losing party all court costs and other expenses of such litigation, including attorney's fees, in a reasonable amount, to be determined by the court. The amount so allowed as attorneys' fees shall be taxed to the losing party as costs of the suit, unless prohibited by law.

36. Independent Contractor:

The successful bidder is an independent contractor. Nothing herein shall create any association, agency, partnership or joint venture between the parties hereto and neither shall have any authority to bind the other in any way.

37. Severability:
If any provision of this agreement or any portion or provision hereof applicable to any particular situation or circumstance is held valid, the remainder of this agreement of the remainder of such provision (as the case may be), and the application thereof to other situations or circumstances shall not be affected thereby.

38. Waiver of Breach:

A waiver of either party of any terms or condition of this agreement in any instance shall not be deemed or construed as a waiver of such term of condition for the future, or of any subsequent breach thereof. All remedies, rights, undertakings, obligations, and agreements contained in this agreement shall be cumulative and none of them shall be in limitation of any other remedy, right, obligation or agreement of either party.

39. Time of the Essence:

Time is of the essence under this agreement as to each provision in which time of performance is a factor.

40. Limitation of Liability:

In no event shall the SNRHA be liable to the successful bidder for any indirect, incidental, consequential or exemplary damages.

41. Indemnity:

a. The successful bidder shall protect, indemnify and hold the SNRHA its officers, employees, agents, consulting engineers and other retained consultants harmless from and against any and all claims, damages, losses, suits, actions, decrees, judgments, attorney's fees, court costs and other expenses of any kind or character which the SNRHA, its officers, employees, agents, consulting engineers or other retained consultants may suffer, or which may be sought against, recovered from or obtainable against the SNRHA, it officers, employees, agents, consulting engineers or other retained consultants (i) as a result of, or by reason of, or arising out of, or on account of, or in consequence of the operations of the successful bidder, its subcontractors or agents, or anyone directly or indirectly employed by any subcontractor or agent, in the fulfillment or performance of the terms, conditions or covenants of the contract or agreement, regardless of whether or not the occurrence which gave rise to such claim, damage, loss, suit, action, judgment or expense was caused, in part, by the party indemnified hereunder; or (ii) as a result of, or by reason of, or arising out of, or on account of, or in consequence of, any neglect in safeguarding the work; or (iii) through

the use of unacceptable materials and/or products which may be defective or manufactured, designed or installed so as to give rise to a claim; or (iv) because of any claim or amount recovered under the "Nevada Industrial Insurance Act", or any other law, ordinance, or decree. Any money due the successful bidder under and by virtue of the contract which is considered necessary by the SNRHA for such purpose, may be retained by the SNRHA for its protection; or in case no money is due, its surety may be held until all such claims, damages, losses, suits, actions, decrees, judgments, attorney's fees and court costs and other expenses of any kind or character as aforesaid shall have been settled and suitable evidence to that effect furnished to the SNRHA; provided, however, that money due the successful bidder will not be withheld when the successful bidder produces satisfactory evidence that is adequately protected by public liability and property damage insurance, if required.

b. In this connection, it is expressly agreed that the successful bidder shall, at its own expense, defend the SNRHA, its officers, employees, agents, consulting engineers and other retained consultants, against any and all claims, suits or actions which may be brought against them, as a result of, or by reason of, or arising out of, or on account of, or in consequence of any act or omission against which the successful bidder shall fail to do so, the SNRHA shall have the right, but not the obligation, to defend the same and to charge all direct and incidental costs of such defense to the successful bidder including attorney's fees and court costs.

c. Reimbursement to the successful bidder by the SNRHA, in whole or in part, for the costs of protecting traffic shall not serve to relieve the successful bidder of its responsibility as set forth in the Bid Documents.

d. The successful bidder guarantees the payment of all just claims for materials, supplies and labor, and all other just claims against it or any subcontractor, in connection with the contract.

42. Lobbying Certification:

By proposing to do business with the SNRHA or by doing business with the SNRHA, each bidder certifies that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the bidder, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the bidder shall complete and submit standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

c. The successful bidder shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contacts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

d. This clause is a material representation of fact upon which reliance was placed when the award was made or entered into. The signing of a contract or acceptance of award certifies compliance with this certification, which is a prerequisite for making or entering into a contract which is imposed by section 1352, Title 31, U.S. code. Any person who fails to file the required certifications shall be subject to civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

43. Bonding:

a. As may be required by these Instruction or the Specifications, each bidder, successful bidder, of contractor may be required to provide one or more of a variety of bonds. Any bid bonds required must be delivered with the bid submittal. Unless otherwise stated within the Specifications or addenda, all other bonds must be delivered to the SNRHA within ten (10) days of receipt of notice from the SNRHA. If the bidder, successful bidder or contractor fails to deliver such required bond by the tenth calendar day after receipt of notice from the SNRHA, he/she shall pay to the SNRHA the amount of $250.00 per day as liquidated damages. If the bidder, successful bidder, or contractor does not keep the required bonds or insurance policies in effect or allows such to lapse, he/she shall pay to the SNRHA the amount of $500.00 per day in liquidated damages. If the Specifications does not require any bond to be submitted, then these Instructions shall not require such bond; however, if the Specifications do require a bond to be submitted this bonding clause shall be in effect.

BRIEF DESCRIPTION OF VARIOUS TYPES OF BONDS THAT MAY BE REQUIRED:

b. The BID BOND shall guarantee to the SNRHA that the bidder shall enter into a contract to provide the required goods or services at the prices and conditions contained within the bid documents, and shall guarantee that the bidder shall provide a performance bond or other required bond if award is to be made to that bidder. The amount of the bid bond may vary from one bid to another.

c. The PERFORMANCE BOND shall guarantee to the SNRHA that the successful bidder or contractor shall perform and complete the work as detailed within and required by the bid documents. Unless otherwise stated within the Specifications or addenda, this bond shall be in the amount of 100% of the contract price or value.

d. The LABOR AND MATERIAL BOND shall guarantee to the SNRHA that the successful bidder or contractor shall pay all labor and materials obligations that he/she incurs as a result of performing the requirements of the bid documents and/or contract.

e. The GUARANTY BOND shall guarantee to the SNRHA that the successful bidder or contractor shall guarantee for a period of not less than one (1) year that (a) all workmanship provided by his/her firm or any subcontractors used shall be free of defect; and (b) all materials or equipment installed or provided shall be free of fault and shall perform in such a manner as to meet the Specifications and requirements of the bid documents or contract.

f. Form of Bonds: All bonds submitted to the SNRHA shall be written on the forms supplied by the SNRHA; and no changes or additions may be made to these forms without the written consent of the SNRHA Purchasing Agent. The bidder shall require the attorney-in-fact who executes the required bond on behalf of the surety to affix thereto a certified and current copy of his/her power of attorney. Pursuant to NRS 680A.300, any bond prepared by a licensed nonresident agent must be countersigned by a resident agent.

44. Debarment and Suspension.

Contractor agrees, by submitting this bid, to include this clause without modification in all lower tier transactions, solicitations, bids, contracts and subcontracts.

a. By submitting this bid SNRHA, the contractor hereby certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency. This certification is made pursuant to the regulations implementing Executive Order 12549, Debarment and Suspension, 28 C.F.R., pt. 67 § 67.510, as published as pt. VII of the May 26, 1988, Federal Register (pp. 19610-19211), and any relevant program-specific regulations.

b. Contractor acknowledges and agrees that, pursuant to Federal Acquisition Regulation (FAR) 9.406-2, the SNRHA has discretion to suspend and/or debar contractor from conducting future business with the SNRHA for contractor's commission of the offenses outlined in FAR 9.406-2, including, but not limited to, violation of any applicable Federal law, commission of fraud, embezzlement and/or theft, receipt of stolen property, sue of inappropriate construction materials, repeated contract violations and recurrent re-inspections. The SNRHA's right to suspend and/or debar contractor is in addition to the SNRHA's right to asses the monetary penalties outlined in Paragraph 44(b)(1).

(1) Contractor acknowledges and agrees that the SNRHA may assess a monetary penalty for a third, and any subsequent punch-list inspection caused by Contractor's negligence or willful disregard in failing to complete Contractor's scope of work by the initial, or secondary punch-list inspection date assigned by the SNRHA or any other local or state governing body. The penalty for a third, and any subsequent punch-list inspection shall be a $200 re-inspection appointment fee plus a $75 per hour services fee plus any overtime fees, if applicable. The monetary penalty shall be paid by Contractor to the SNRHA, or deducted by the SNRHA from the contractor's owed balance under the contract.

45. Section 3: The SNRHA has mandated numerical goals for resident hiring on all construction contracts, service contracts and professional services contracts which contain a labor component. These numerical goals are in compliance with Section 3 of the Housing and Urban Development Act of 1968 (12 U.S.C. 1701u), providing for employment opportunities for small businesses and lower income persons in connection with projects and activities funded by public housing assistance.

i. The SNRHA has established four (4) ways in which a contractor may fulfill the Section 3 Requirements (refer to Resident Hiring Scale under Attachment A). They are as follows:

a. Joint venture with a SNRHA resident-owned business. The business must be 51% or more owned by SNRHA Section 3 residents (includes all SNRHA housing programs) and receive a portion of the contract commensurate with the scale requirement outlined in the Section 3 Hiring Scale; or

b. Direct hiring of SNRHA's Public Housing residents, Housing Choice Voucher participants, Affordable Housing residents and/or low and very low-income neighborhood residents based on the Section 3 Hiring Scale; or

c. Contractor incurs the cost of providing skilled training (State Board certified or similar) for residents in an amount commensurate with the sliding scale set forth in the Section 3 Hiring Scale; or

d. Contractor makes a contribution to the SNRHA's Section 3 Job Development Fund to provide assistance to residents to obtain training and employment. The level of contribution must be commensurate with the sliding scale set forth in the Section 3 Hiring Scale.

# SAMPLE

**CONTRACT BETWEEN**

**THE SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY**
**AND**
**CLICK HERE AND TYPE COMPANY**

## INTRODUCTION

This Click Here and Type Contract (the "Contract") by and between the Southern Nevada Regional Housing Authority, a Nevada non-profit corporation (hereinafter "SNRHA") and Click Here and Type COMPANY NAME (hereinafter "the Contractor") is hereby entered into this _____ day of _____, 20____ (the "Effective Date").

**1.0 Definitions**

**1.1 Invitation For Bids ("IFB").** A competitive solicitation process conducted by the SNRHA wherein an award is generally made to the responsive and responsible bidder that submits the lowest proposed cost.

**1.2 Purchasing Manager ("SNRHA PM").** The SNRHA Purchasing Manager.

**1.3 Request For Proposals ("RFP").** A competitive solicitation process conducted by the SNRHA wherein an award is generally made to the top-rated responsive and responsible bidder.

**1.4 Days**. All references to "days" shall be calendar days; in the case that the last day referenced falls on a Saturday, Sunday or legal holiday, then the period of time shall be automatically extended to include the next work day.

**1.5 Appendices.** The following documents are included in the Contract as individually noted exhibits and shall be incorporated herein and made a part of this Contract by reference as if fully set forth herein:

**1.5.1 Appendix No. A:** form HUD-5370 (11/2006), **HUD General Conditions of the Contract for Construction, Public Housing Programs and any amendments thereto**;

**1.5.2 Appendix No. B: Section 3 Mandatory Requirements**

**1.5.3 Appendix No. C:** form HUD-4230A, **Report of Additional Classification and Rate**;

**1.5.4 Appendix No. D:** form HUD-51000 (7/97), **Schedule of Amounts for Contract Payments**;

**1.5.5 Appendix No. E:** form HUD-51001, (3/92), **Periodic Estimate of Partial Payment**;

**1.5.6 Appendix No. F:** form HUD-51002, (3/92), **Schedule of Change Orders;**

**1.5.7 Appendix No. G:** form HUD-51003, (3/92) **Schedule of Materials Stored;**

**1.5.8 Appendix No. H:** form HUD-51004, (3/92), **Summary of Materials Stored;**

**1.5.9 Appendix No. I:** form SNRHA **Subcontractor/Supplier Final Waiver of Mechanics Lien.**

**1.6** The following, each of which was either issued by the SNRHA as a part of the competitive solicitation and/or which was completed and returned by the Contractor in response to the solicitation (copies are not included under any of the appendices but are included herein by reference and are included within the solicitation file):

**1.6.1** Current City of Las Vegas Business License;

**1.6.2** Current State of Nevada Contractor's License;

**1.6.3** Current Insurance Certificate/Endorsement (naming the SNRHA as "additional insured");

**1.6.4** GSA Debarred and HUD Limited Denial of Participations Certifications;

**1.6.5** Profile of Firm Form;

**1.6.6** Subcontractors Exceeding 5% and 1% Listings;

**1.6.7** Subcontractors List;

**1.6.8** Subcontractor's Affirmative Action Form;

**1.6.9** Certification for Business Concerns Seeking Section 3 Preference in Contracting and Demonstration of Capability;

**1.6.10** Contractor's and Subcontractor's Non-Conclusive Affidavits;

**1.6.11** Technical Specifications included as part of Bid Package Click Here and Type IFB NO.;

**1.6.12** Summary of Work included as part of Bid Package Click Here and Type IFB NO.;

**1.7** **Priority.** In the case of any discrepancy between this Contract and any of the above noted documents, Appendix A shall control. In the case of any discrepancy between this Contract and Appendices B-G, the requirement(s) listed within the body of this Contract shall first take precedence, then the requirement(s) listed within each appendix shall take precedence in the order they are listed above.

**2.0** **Term of Contract**. Services pursuant to this Contract (the "Services") shall begin upon Contractor's receipt of the written Notice to Proceed by SNRHA, pursuant to Section 5 of Appendix A. Notwithstanding the continuation of any warranties contained herein, this Contract shall terminate pursuant to Sections 32 or 34 of Appendix A, or upon Final Completion (as described in Section 3.2.3.2).

**3.0** **Services and Payment**

**3.1** **Scope of Services.** The Contractor shall furnish all labor, material, equipment and services, and perform and complete rehabilitation services of Click Here and Type DESCRIPTION OF PROJECT, located at the following location:

Click Here and Type PROPERTY ADDRESS OR DESCRIPTION

in accordance with this Agreement and IFB No. Click Here and Type IFB NO. prepared by the SNRHA and any duly executed Addenda to this Agreement. Said labor, materials, equipment and services shall be provided on the dates and times determined by the SNRHA at the above-stated SNRHA communities and/or facilities. In addition, the SNRHA shall retain the right to implement and/or enforce any item issued as a part of IFB No. Click Here and Type IFB NO..

**3.2** **Cost/Value of Services**

**3.2.1 Labor Costs.** The Contractor shall not pay wages that are less than the highest wage required by either of the following:

**3.2.1.1** The wage determination rates listed in IFB No. Click Here and Type IFB NO.

**3.2.1.2** Appendix A.

**3.2.2 Contract Value.** The SNRHA shall pay the Contractor for the performance of the Contract, in current funds, subject to additions and deductions as provided in the Technical Specifications, not-to-exceed ("NTE") the sum of:

**$Click Here and Type AMOUNT**

Contractor exceeds the above-stated NTE amount at its own risk.

**3.2.3 Time for Performance.** The Contractor hereby agrees to commence work under this Contract upon receipt of a written Notice to Proceed ("NTP"), submitted by SNRHA. The Contractor shall complete the project within Click Here and Type WRITTEN NUMBER OF DAYS (Click Here and Type NUMERICAL DIGIT) calendar days thereafter, pursuant to Section 25 of Appendix A.

**3.2.3.1 Delays/Time Extensions.** Time extensions for performance may be granted by the SNRHA PM and SNRHA Executive Director pursuant to Section 32 of Appendix A. Any time extension shall be granted by written modification to this Contract.

**3.2.3.2 Final Completion.** Pursuant to Section 20 of Appendix A, the Contractor shall notify the SNRHA PM, in writing, as to the date when in its opinion the work is substantially complete and ready for inspection. Upon receipt of such notification, SNRHA shall conduct an inspection of the work within ten (10) days. SNRHA and/or the A/E shall promptly advise the Contractor, in writing, of any remaining final punch list items following such inspection. The Contractor shall notify SNRHA in writing when all punch list items have been completed and all clean-up has been done. SNRHA will then conduct a final inspection within ten (10) days of receipt of such notification. Performance shall be considered complete upon the Contractor's receipt from SNRHA of written acceptance of the work and SNRHA's receipt from the Contractor of the following:

**3.2.3.2.1** Certificate of Occupancy issued by the responsible local agency;

**3.2.3.2.2** One original and two notarized copies of the Contractor's lien release (in the form attached as Appendix H), including certifications that:

**3.2.3.2.2.1** the work was completed in accordance with the Technical Specifications, including any modifications to this Contract;

**3.2.3.2.2.2** the total amount due the Contractor and a separately stated amount for each unsettled claim against the SNRHA;

**3.2.3.2.2.3** documentation noting that the SNRHA is released of all claims, other than those stated in the Contractor's release;

**3.2.3.2.2.4** wages paid to laborers were paid as required herein; and

**3.2.3.2.2.5** all guaranties and warranties contained herein are assigned to the SNRHA.

**3.2.4** **Liquidated Damages**. Pursuant to Section 33 of Appendix A, the Contractor agrees to pay to the SNRHA, the sum of Click Here and Type per day as fixed, agreed, liquidated damages for each consecutive calendar day beyond the time for performance as provided in Section 3.2.3, provided this Contract is not terminated pursuant to Section 11, until Final Completion is achieved.

**3.2.5** **Non-Escalation.** Unless otherwise specified within the RFP/IFB documents, the unit prices reflected in this Contract shall remain firm with no provision for price increases during the term of the Contract.

## 4.0 Billing Procedure

**4.1** To receive payment for Services rendered pursuant to this Contract, the Contractor shall:

**4.1.1** Comply with Section 27 of Appendix A.

**4.1.2** Submit a fully completed Periodic Estimate for Partial Payment form (form HUD-51001, attached as Appendix D), showing the value of the work performed each period based upon the approved breakdown of the contract price. The approved breakdown of the contract price is reflected in the Schedule of Amounts for Contract Payment (form HUD-51000, attached as Appendix C) which was previously submitted by the Contractor and approved by SNRHA. Such estimates shall be submitted not later than thirty (30) days of completing the work and shall be subject to corrections and revisions by the SNRHA.

**4.1.3** Submit all certified payroll reports up to the date of the work being billed and as detailed in Section 46 of Appendix A.

**4.1.4** Progress payments must be approved by the SNRHA PM and the SNRHA Executive Director with the concurrence of the Architect/Engineer ("A/E") prior to payment.

**4.1.5** Progress payment requests must be delivered to the attention of:

Southern Nevada Regional Housing Authority
Attn: Accounts Payable
P.O. Box 1897
Las Vegas, NV 89125

**4.1.6** The Contractor shall complete and submit the following forms as required with each request for progress payment(s):

**4.1.6.1** Schedule for Change Orders (form HUD-51002)

**4.1.6.2** Schedule for Materials Stored (form HUD-51003)

**4.1.6.3** Summary of Materials Stored (form HUD-51004)

**4.1.7** The SNRHA will pay each properly completed invoice received on a Net/30 basis. Any invoice received that is not properly completed will not be paid unless and/or until the Contractor complies with the applicable provisions of this contract.

**4.1.8** Final payment will be made by SNRHA upon receipt of the Contractor's release as required by Section 3.2.3.2, all required payroll reports have been received and any wage discrepancies have been resolved by the Contractor.

**5.0 Contractor's Obligations.** Pursuant to this Contract, the Contractor agrees to provide the specific construction obligations detailed in Appendix A and the Technical Specifications issued by the SNRHA included in IFB No. Click Here and Type IFB NO. and herein.

**5.1** The Contractor aggress not to accept or perform any assigned work initiated by a contract amendment or change order without the prior written approval of the SNRHA PM and the SNRHA Executive Director.

**5.1.1 Change Order Requests:** The Contractor acknowledges, by signature below, that change order requests will not be summarily approved. All change order requests must be submitted to SNRHA for approval, prior to undertaking the additional work, in accordance with Section 29 of Appendix A, and the Additional Clauses and Requirements section included in IFB No. Click Here and Type IFB NO..

**5.1.2 Minimum Rates of Pay.** The Contractor shall pay not less than the wages required under the wage determination rates included in IFB No. Click Here and Type IFB NO. and Section 46 of Appendix A, and any amendments thereto.

**5.2 Supervision and Oversight.** The Contractor shall be solely responsible for providing supervision and oversight to all of the Contractor's personnel and any subcontractors that are assigned to the SNRHA work pursuant to this Contract.

**5.3 Qualified Personnel.** The Contractor warrants and represents that it will assign only qualified personnel to perform the Services. For the purposes of this Contract, the term "qualified personnel" shall mean those personnel that are experienced and/or trained in the manner generally accepted within the Contractor's Industry.

**5.4 Compliance with Federal and State Laws.** All work performed by the Contractor, pursuant to this Contract, shall be done in accordance with all applicable federal, state and local laws, regulations, codes and ordinances.

**5.5 Licensing.** The Contractor shall provide SNRHA with copies of any required current City, State and/or Federal licenses. Failure to maintain these licenses in a current status during the term(s) of this Contract shall constitute a material breach thereof.

**5.6 Permits.** Unless otherwise stated in the Contract documents, all local, state or federal permits which may be required to provide the Services ensuing from award of this Contract, whether or not known to either the SNRHA or the Contractor at the time of the Contract execution, shall be the sole responsibility of the Contractor including any and all costs therefore.

**5.7 Government Standards.** It is the responsibility of the Contractor to ensure that all items and Services proposed conform to all local, state and federal law concerning safety (e.g., OSHA and NOSHA) and environmental control (e.g., EPA and Clark County Pollution Regulations) and any other enacted ordinance, code, law or regulation. The Contractor shall be responsible for all costs incurred for compliance with any such possible ordinance, code, law or regulation. No time extensions shall be granted or financial consideration given to the Contractor for time or monies lost due to violations of any such ordinance, code, law or regulations that may occur.

**5.8 Freight-On Bill and Delivery.** All costs submitted by the Contractor shall reflect the cost of delivering the proposed items and/or Services to the locations(s) specified within the RFP/IFB documents or within the Contract.

**5.9 Work on SNRHA Property.** If the Contractor's work under the Contract involves operations by the Contractor on SNRHA premises, the Contractor shall take all necessary precautions to prevent the occurrence of any injury to persons or property during the progress of such work.

**5.10 Subcontractors.** Unless otherwise stated within the RFP/IFB/bid documents, the Contractor may not use any subcontractors to accomplish any portion of the Services required by this Contract without the prior written permission of the SNRHA PM.

**5.11 Salaries and Expenses Relating to the Contractor's Employees.** Unless otherwise stated within the RFP/IFB documents, the Contractor shall pay all salaries and expenses of, and all federal Social Security taxes, federal and state unemployment taxes, and any similar taxes relating to its employees used in the performance of the Contract. The Contractor further agrees to comply with all federal, state and local wage and hour laws and all licensing laws applicable to its employees or other personnel furnished under this Contract.

**5.12 Communication.** If during the period of the Contract, it is necessary that the SNRHA place toll or long distance telephone calls or facsimiles in connection with the Contractor's performance of the Contract (for complaints, adjustments, shortages, failure to deliver, etc.), it is understood that the Contractor may, at the discretion of the SNRHA, bear the charge or expense for all such calls and/or facsimiles.

**5.13 Access to Records.** Both parties hereby agree that the Contractor will make available to the SNRHA, HUD, the Comptroller General of the United States, or any of their duly authorized representatives (including retained auditors), any books, documents, papers, and records of the Contractor which are directly pertinent to this Contract for the purpose of making audit, examination, excerpts and transcriptions.

**5.14 Record Retention.** The Contractor shall retain all such records pertaining to this Contract for a period of not less than three (3) years after final payment or the completion of any Services provided pursuant to this Contract, whichever occurs later.

**5.15 Backorders**

**5.15.1** The Contractor must notify the SNRHA PM within ten (10) days of the following:

**5.15.1.1** Any and all backordered materials;

**5.15.1.2** Any delay in the Contractor's performance; and

**5.15.1.3** The estimated date for delivery or performance.

**5.16 Inspections.** Pursuant to Sections 3 and 20 of Appendix A, the Contractor shall permit SNRHA and/or the A/E to conduct periodic inspections of the work. Any deficiencies noted by SNRHA and/or the A/E during inspections shall be disclosed to the Contractor in writing within Click Here and Type WRITTEN NUMBER OF DAYS (Click Here and Type NUMERICAL DIGIT) days of discovery, and the Contractor shall remedy such deficiency within Click Here and Type WRITTEN NUMBER OF DAYS (Click Here and Type NUMERICAL DIGIT) days of notification of such from SNRHA and/or the A/E.

**5.17 Progress Meetings**. The Contractor shall attend progress meetings as required by SNRHA according to the schedule SNRHA will provide. Progress meetings shall be used to discuss work progress, payments, problems or deficiencies noted during inspections, overdue reports, the status of the construction schedule, and any other matters relevant to this Contract.

## 6.0 Insurance Requirements

**6.1** The Contractor shall maintain insurance coverage during the effective term(s) of this Contract as provided in Section 36 of Appendix A and Section 4 of the Conditions of Form of Bid included in IFB No. Click Here and Type IFB NO..

**6.2** The Contractor shall provide the SNRHA with current certificate(s)/endorsement(s) evidencing the insurance coverage referenced above. Failure to maintain the above-referenced insurance coverage, including naming the SNRHA as an additional insured (where appropriate) during the term(s) of this Contract shall constitute a material breach thereof.

**6.3** Insurance certificate(s)/endorsement(s) shall be delivered to:

**Purchasing Manager**
**Contracts & Purchasing**
**Southern Nevada Regional Housing Authority**
**Post Office Box 1897**
**Las Vegas, NV 89125**

## 7.0 Indemnification

**7.1** The Contractor shall protect, indemnify and hold the SNRHA, its officers, employees, and agents harmless from and defend against any and all claims, damages, losses, suits, actions, decrees, judgments, attorney's fees, court costs and other expenses of any kind or character which the SNRHA, its officers, employees, agents, consulting engineers or other retained consultants may suffer, or which may be sought against, recovered from or obtainable against the SNRHA, its officers, employees, and agents, based upon the Contractor's actions or failure to act during the performance of the Contractors duties hereunder, or as a result of any work performed by the Contractor, regardless of when such claims shall arise. The Contractor's duty to indemnify SNRHA shall apply regardless of whether or not the event which gave rise to such a claim was caused, in part, by SNRHA.

**7.2** Any money due by the Contractor under and by virtue of this Contract which is considered necessary by the SNRHA for such purpose, may be retained by the SNRHA for its protection; or in case no money is due, its surety may be held until all such claims, damages, losses, suits, actions, decrees, judgments, attorney's fees and court costs and other expenses of any kind or character as aforesaid shall have been settled and suitable evidence to that effect furnished to the SNRHA provided, however, that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that it is adequately protected by applicable public liability and property damage insurance;

**7.3** The Contractor shall, at its own expense, defend the SNRHA, its officers, employees, and agents, against any and all claims, suits or actions which may be brought against them, or any of them, as a result of, or by reason of, or arising out of, or on account of, or in consequence of any act or failure to act the consequences of which the Contractor has indemnified the SNRHA, its officers, employees, and agents against. If the Contractor fails to do so, the SNRHA shall have the right, but not the obligation, to defend the same and to charge all direct and incidental costs of such defense to the Contractor including attorney's fees and court costs.

**7.4** The Contractor guarantees the payment of all claims for materials, supplies and labor, and all other claims against it or any subcontractor, in connection with the Contract.

**7.5** The Contractor shall provide that any authorized contractual arrangement with a subcontractor shall be in conformance with the terms of this Contract including the indemnity provisions of this Section 8.

## 8.0 Financial Viability and Regulatory Compliance

**8.1** The Contractor warrants and represents that its corporate entity is in good standing with all applicable federal, state and local licensing authorities and that it possesses all requisite licenses to perform the Services required by this Contract. The Contractor further warrants and represents that it owes no outstanding federal, state or local taxes or business assessments.

**8.2** Contractor agrees to promptly disclose to the SNRHA any IRS liens or insurance or licensure suspension or revocation that may adversely affect its capacity to perform the Services required by this Contract. The failure by the Contractor to disclose such issue to the SNRHA in writing within five (5) days of Contractor's receipt of such notification will constitute a material breach of this Contract.

**8.3** The Contractor further agrees to promptly disclose to the SNRHA any change of its ownership and/or any declaration of bankruptcy that the Contractor may undergo during the term(s) of this Contract. The failure of the Contractor to disclose any change of its ownership and/or its declaration of bankruptcy within five (5) days of said actions shall constitute a material breach of this Contract.

## 9.0 Disputes

**9.1** All disputes arising under or relating to this Contract, except for disputes relating to Labor Standards - Davis Bacon and Related Acts, shall be disposed of in accordance with Section 31 of Appendix A.

**10.0** **Breach.** Pursuant to 24 CFR 85.36(i), as issued by the Office of the Secretary, HUD, the SNRHA and the Contractor each agree to comply with the following provisions:

**10.1** **Termination For Cause and Convenience.** SNRHA may terminate this Contract for cause, pursuant to Section 32 of Appendix A. SNRHA may also terminate this Contract for convenience pursuant to Section 34 of Appendix A. Any termination notice shall state the following:

**10.1.1** whether the Contract is being terminated for convenience or cause;

**10.1.2** whether the Contract is terminated in whole or in part;

**10.1.3** if terminated for cause, the acts or omissions constituting the material breach, the SNRHA PM's determination that failure to perform is not excusable, SNRHA's right to charge excess costs of re-procurement to the Contractor, and the Contractor's appeal rights;

**10.1.4** effective date of termination;

**10.1.5** if applicable, the Contractor's right to proceed under the non-terminated portion of the Contract; and

**10.1.6** any special instructions.

**10.2** Prior to termination, the SNRHA may choose, it its sole discretion, to warn the Contractor, verbally or in writing, of any issue of non-compliant or unsatisfactory performance. Such warning may include placing the Contractor on probation, thereby giving the Contractor a certain period of time to correct the deficiencies or potentially suffer termination. The SNRHA shall maintain in the Contract file a written record of any such warning detailing all pertinent information. If the Contractor does not agree with such action, the Contractor shall have ten (10) days from receipt of such verbal or written warning to dispute or protest such action in writing; if it does not do so within the 10-day period, it shall have no recourse but to accept the SNRHA's position on the issue. The written protest must detail all pertinent information pertaining to the dispute, including any justification detailing the SNRHA's alleged incorrect action(s).

**10.3** After termination, if the Contractor does not agree with the SNRHA's justification for the termination, the Contractor shall have ten (10) days from the date of termination to dispute such action in writing.

**10.4** Any protest or dispute submitted by the Contractor under this Section shall thereafter be conducted in accordance with Section 9.1 herein.

**10.5** All rights and remedies granted to SNRHA herein and any other rights and remedies which SNRHA may have at law and in equity are hereby declared to be cumulative and not exclusive. The fact that SNRHA

may have exercised any remedy without terminating this Contract shall not impair SNRHA's rights thereafter to terminate or to exercise any other remedy herein granted, or to which SNRHA may be otherwise entitled.

**11.0 Applicable Federal Law.** Pursuant to 24 CFR 85.36(i), as issued by the Office of the Secretary, HUD, the SNRHA and the Contractor each agree to comply with the following provisions:

**11.1 Executive Order 11246.** For all construction contracts awarded in excess of $10,000, both parties hereby agree to comply with "Executive Order 11246 of September 24, 1965, entitled "Equal Employment Opportunity," as amended by Executive Order 11375 of October 13, 1967, and as supplemented in Department of Labor Regulations (41 CFR Chapter 60).

**11.2 Copeland "Anti-Kickback" Act.** For all construction or repair contracts awarded, both parties hereby agree to comply with the Copeland "Anti-Kickback" Act (18 U.S.C. 874) as supplemented in Department of Labor Regulations (29 CFR Part 3).

**11.3 Mandatory Section 3 Requirements:** The SNRHA has adopted a scale (See Appendix B) for hiring that is used on all construction, service and professional contracts that contain a labor component as *referenced HUD Act of 1968, as amended, 12 U. S. C. 170 u.* All Section 3 covered contracts shall include the following clause (referred as to the Section 3 Clause):

**11.3.1** The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low- and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

**11.3.2** The parties to this contract agree to comply with HUD's regulations in 24 CFR part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

**11.3.3** The contractor agrees to send to each labor organization or representative or workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

**11.3.4** The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon a finding that the subcontractor is in violation of the regulations in 24 CFR part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR part 135.

**11.3.5** The contractor will certify that any vacant employment positions, including training positions, that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR part 135 require

employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR part 135.

**11.3.6** Noncompliance with HUD's regulations in 24 CFR part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

**11.3.7** With respect to work performed in connection with Section 3 covered Indian housing assistance, Section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (i) preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprises. Parties to this contract that are subject to the provisions of Section 3 to the maximum extent feasible, but not in derogation of compliance with Section 7(b).

**11.4** **Davis-Bacon Act.** For all construction contracts awarded in excess of $2,000 when required by Federal Grant Program legislation, both parties hereby agree to comply with the Davis-Bacon Act (40 U.S.C. 276a to 276a-7) as supplemented in Department of Labor Regulations (29 CFR Part 5).

**11.5** **Sections 103 and 107 of the Contract Work Hours and Safety Standards Act.** For all construction contracts awarded in excess of $2,000 and for other contracts, which involve the employment of mechanics or laborers awarded in excess of $2,500, both parties hereby agree to comply with the Sections 103 and 107 of the Contract Work Hours and Safety Act (40 U.S.C. 327-330) as supplemented in Department of Labor Regulations (29 CFR Part 5).

**11.6** **Clean Air Act.** For all contracts in excess of $100,000, both parties hereby agree to comply with all applicable standards, orders or requirements issued under Section 306 of the Clean Air Act (42 U.S.C. 1857(h), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15).

**11.7** **Energy Policy and Conservation Act.** Both parties hereby agree to comply with all mandatory standards and policies relating to energy efficiency, which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163, 89 Stat. 871).

**11.8** **Additional Federally Required Orders/Directives.** Both parties agree that they will comply with the following laws and directives, where applicable:

**11.8.1** Executive Order 11061, as amended, which directs the Secretary of HUD to take all action which is necessary and appropriate to prevent discrimination by agencies that utilize federal funds.

**11.8.2** Public Law 88-352, Title VI of the Civil Rights Act of 1964, which provides that no person in the United States shall, on the basis of race, color, national origin or sex, be excluded from participation in, denied the benefits of, or subjected to discrimination under any program or activity which receives federal financial assistance. The SNRHA hereby extends this requirement to the Contractor and its private contractors. Specific prohibited discriminatory actions and corrective action are described in Chapter 2, Subtitle C, Title V of the Anti-Drug Abuse Act of 1988 (42 U.S.C. 19901 et. seq.).

**11.8.3** Public Law 90-284, Title VIII of the Civil Rights Act of 1968, popularly known as the Fair Housing Act, which provides for fair housing throughout the United States and prohibits any person from discriminating in the sale or rental of housing, the financing of housing or the provision of brokerage services, including in any way making unavailable or denying a dwelling to any person because of race, color, religion, sex or national origin. Pursuant to this statute, the

SNRHA requires that the Contractor administer all programs and activities, which are related to housing and community development in such a manner as to affirmatively further fair housing.

**11.8.4** The Age Discrimination Act of 1975, which prohibits discrimination on the basis of age.

**11.8.5** Anti-Drug Abuse Act of 1988 (42 U.S.C. 11901 et. seq.).

**11.8.6** HUD Information Bulletin 909-23 which is the following:

**11.8.6.1** Notice of Assistance Regarding Patent and Copyright Infringement;

**11.8.6.2** Clean Air and Water Certification; and

**11.8.6.3** Energy Policy and Conservation Act.

**11.8.7** That the funds that are provided by the SNRHA and HUD hereunder shall not be used, directly or indirectly, to employ, award a Contract to, or otherwise engage the services of any debarred, suspended or ineligible Contractor.

**11.8.8** That none of the personnel who are employed in the administration of the work required by this Contract shall, in any way or to any extent, be engaged in the conduct of political activities in violation of Title V, Chapter IS, of the United States Code.

**11.8.9** That neither party has colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to put in a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought by agreement or collusion, or communication or conference, with any person, to fix the bid price of affiant or of any other bidder, to fix overhead, profit or cost element of said bid price, or that of any other bidder, or to secure any advantage against either party or any person interested in the proposed Contract; and that all statements in said proposal or bid are true.

**11.8.10** The mention herein of any statute or Executive Order is not intended as an indication that such statute or Executive Order is necessarily applicable nor is the failure to mention any statute or Executive Order intended as an indication that such statute or Executive Order is not applicable. In this connection, therefore, each provision of law and each clause, which is required by law to be inserted in this Contract, shall be deemed to have been inserted herein, and this Contract shall be read and enforced as though such provision or clause had been physically inserted herein. If, through mistake or otherwise, any such provision is not inserted or is inserted incorrectly, this Contract shall forthwith be physically amended to make such insertion or correction upon the application of either part.

**11.9 Rights in Data and Patent Rights (Ownership and Proprietary Interest).** SNRHA shall have exclusive ownership of, all proprietary interest in, and the right to full and exclusive possession of all information, materials, and documents discovered or produced by Contractor pursuant to the terms of this Contract, including but not limited to reports, memoranda or letters concerning the research and reporting tasks of this Contract.

**12.0 Debarment and Suspension.** Contractor agrees, by submitting this bid, to include this clause without modification in all lower tier transactions, solicitations, bids, contracts and subcontracts.

**12.1** By execution of this Contract with the SNRHA, the Contractor hereby certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency. This certification is made pursuant to the regulations implementing Executive Order 12549, Debarment and Suspension, 28

C.F.R. pt. 67 § 67.510, as published as pt. VII of the May 26, 1988, Federal Register (pp. 19610-19211), and any relevant program-specific regulations.

**12.2** Contractor acknowledges and agrees that, pursuant to Federal Acquisition Regulation ("FAR") 9.406-2, the SNRHA has discretion to suspend and/or debar contractor from conducting future business with the SNRHA for contractor's commission of the offenses outlined in FAR 9.406-2, including, but not limited to, violation of any applicable Federal law, commission of fraud, embezzlement and/or theft, receipt of stolen property, use of inappropriate construction materials, repeated contract violations and recurrent re-inspections. The SNRHA's right to suspend and/or debar contractor is in addition to the SNRHA's right to assess the monetary penalties outlined in Section 12.2.1.

**12.2.1** Contractor acknowledges and agrees that the SNRHA may assess a monetary penalty for a third, and any subsequent punch-list inspection caused by Contractor's negligence or willful disregard in failing to complete Contractor's scope of work by the initial, or secondary, punch-list inspection date assigned by the SNRHA or any other local or state governing body. The penalty for a third, and any subsequent punch-list inspection shall be a $200 re-inspection appointment fee plus a $75 per hour services fee plus any overtime fees, if applicable. The monetary penalty shall be paid by Contractor to the SNRHA, or deducted by the SNRHA from the contractor's owed balance under the contract.

**13.0 Lobbying Certification.** By execution of this Contract with the SNRHA the Contractor thereby certifies, to the best of his or her knowledge and belief, that:

**13.1** No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal loan, the entering into of any cooperative agreement, or modification of any federal contract, grant, loan, or cooperative agreement.

**13.2** If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this federal contract, grant, loan, or cooperative agreement, the Contractor shall complete and submit Standard Form – LLL, Disclosure Form to Report Lobbying, in an accordance with its instructions.

**13.3** The Contractor shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

**14.0 Miscellaneous Provisions**

**14.1 Notices, Invoices and Reports**. Except as otherwise provided in this Contract, all notices, reports, records or other communications that are required or permitted to be given to the parties under this Contract shall be sufficient in all respects if given in writing and delivered in person, by facsimile, by overnight courier or by registered or certified mail, postage prepaid, return receipt requested, to the receiving party at the following address:

**If to SNRHA:**
Procurement Department
Southern Nevada Regional Housing Authority
340 North 11th Street, Suite 180
Las Vegas, NV 89101
Facsimile: 702-922-7050

**Copy to:** Parker Nelson & Associates

2460 Professional Court
Las Vegas, NV 89128
Attn: Theodore Parker, III, Esq.
Facsimile: 702-868-8001

**If to Contractor:**

or such other address as such party may have given to the other parties by notice pursuant to this Section. Notice shall be deemed given on (i) the date such notice is personally delivered, (ii) three (3) days after the mailing if sent by certified or registered mail, (iii) one (1) business day after the date of delivery to the overnight courier if sent by overnight courier, or (iv) the next succeeding business day after transmission by facsimile, provided that any fax delivery is followed up with another method of notice listed in this Section within one (1) business day of sending the facsimile.

**14.2 Taxes.** All persons doing business with the SNRHA are hereby made aware that the SNRHA is exempt from paying Nevada State Sales and Use Taxes and Federal Excise Taxes. A letter of Tax Exemption will be provided upon request.

**14.3 Officials, Agents and Employees of the SNRHA Not Personally Liable.** It is agreed by and between the parties hereto that in no event shall any official, officer, employee, or agent of the SNRHA in any way be personally liable or responsible for any covenant or agreement herein contained whether expressed or implied, nor for any statement, representation or warranty made herein or in any connection with this Contract.

**14.4 Assignment.** Except pursuant to Section 35 of Appendix A, the Contractor shall not assign or transfer any interest in this Contract.

**14.5 Entire Agreement; Amendment.** This Contract (including all Appendices attached hereto or other documents included by reference herein) constitutes the entire contract between the parties hereto and may not be modified except by an instrument in writing signed by the party to be charged. This Contract may be amended, supplemented or modified only by a written instrument duly executed by or on behalf of each party hereto.

**14.6 Governing Law; Venue.** The laws of the State of Nevada shall govern the validity, construction and effect of this Contract, unless such laws are superseded by, or in conflict with applicable federal laws and/or federal regulations. Each party irrevocably submits to the exclusive jurisdiction of any federal or state court located in Clark County, Nevada in any action, suit or proceeding arising out of or relating to this Contract, and agrees that any such action, suit or proceeding shall be brought only in such court.

**14.7 Attorney's Fees.** In the event that litigation is commenced by one party hereto against the other in connection with the enforcement of any provision of this Contract, the prevailing party shall be paid by the losing party all court costs and other expenses of such litigation, including reasonable attorneys' fees. The amount so allowed as attorneys' fees shall be taxed to the losing party as costs of the suit, unless prohibited by law.

**14.8 Severability.** If any provision of this Contract or any portion or provision hereof applicable to any particular situation or circumstance is held invalid, the remainder of this Contract or the remainder of such provision (as the case may be), and the application thereof to other situations or circumstances shall not be affected thereby.

**14.9 Waiver of Breach.** A waiver of either party of any terms or conditions of this Contract in any instance shall not be deemed or construed as a waiver of such term or condition for the future, or of

any subsequent breach thereof. All remedies, rights, undertakings, obligations, and agreements contained in this Contract shall be cumulative and none of them shall limit any other remedy, right, obligation or agreement of either party.

**14.10 Time of the Essence.** Time is of the essence for performance of this Contract.

**14.11 Payment and Performance Bonds**. If the Contract Value as provided in Section 3.2.2 exceeds $100,000, the Contractor shall furnish bonds covering faithful performance of the Contract and payment obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Value. The amount of each bond shall be equal to one hundred percent (100%) of the Contract Value. In addition:

**14.11.1** The bond must be approved and reviewed by the SNRHA PM;

**14.11.2** The bond must name the Southern Nevada Regional Housing Authority as obligee;

**14.11.3** The Contractor shall deliver the required bonds to SNRHA before the commencement of any work pursuant to this Contract.

**14.12 Limitation of Liability.** In no event shall the SNRHA be liable to the Contractor for any indirect, incidental, consequential or exemplary damages.

**15.0 Certifications.** The undersigned representatives of each party acknowledge by signature below that they have reviewed the foregoing and understand their respective obligations as defined herein. This Contract may be signed in counterparts.

**CONTRACTOR NAME**

**By:** _____ Date: _____

**SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY**

**By:** _____ Date: _____
JOHN HILL
EXECUTIVE DIRECTOR

# ATTACHMENT A

# SNRHA'S MANDATORY SECTION 3 REQUIREMENTS FOR EMPLOYMENT OPPORTUNITIES FOR SMALL BUSINESSES AND LOW-INCOME RESIDENTS/PERSONS

# SECTION 3 CLAUSE

## SNRHA'S MANDATORY SECTION 3 REQUIREMENTS

***This contract is subject to the following conditions under Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3).***

A. The work to be performed under this contract is subject to the requirements of Section 3 of the Housing and Urban Development Act of 1968, as amended, 12 U.S.C. 1701u (Section 3). The purpose of Section 3 is to ensure that employment and other economic opportunities generated by HUD assistance or HUD-assisted projects covered by Section 3, shall, to the greatest extent feasible, be directed to low and very low-income persons, particularly persons who are recipients of HUD assistance for housing.

B. The parties to this contract agree to comply with HUD's regulations in 24 CFR Part 135, which implement Section 3. As evidenced by their execution of this contract, the parties to this contract certify that they are under no contractual or other impediment that would prevent them from complying with the part 135 regulations.

C. The contractor agrees to send to each labor organization or representative of workers with which the contractor has a collective bargaining agreement or other understanding, if any, a notice advising the labor or organization or workers' representative of the contractor's commitments under this Section 3 clause, and will post copies of the notice in conspicuous places at the work site where both employees and applicants for training and employment positions can see the notice. The notice shall describe the Section 3 preference, shall set forth minimum number and job titles subject to hire, availability of apprenticeship and training positions, the qualifications for each; and the name and location of the person(s) taking applications for each of the positions; and the anticipated date the work shall begin.

D. The contractor agrees to include this Section 3 clause in every subcontract subject to compliance with regulations in 24 CFR Part 135, and agrees to take appropriate action, as provided in an applicable provision of the subcontract or in this Section 3 clause, upon finding that the subcontractor is in violation of the regulations in 24 CFR Part 135. The contractor will not subcontract with any subcontractor where the contractor has notice or knowledge that the subcontractor has been found in violation of the regulations in 24 CFR Part 135.

E. The contractor will certify that any vacant employment positions, including training positions that are filled (1) after the contractor is selected but before the contract is executed, and (2) with persons other than those to whom the regulations of 24 CFR Part 135 require employment opportunities to be directed, were not filled to circumvent the contractor's obligations under 24 CFR Part 135.

F. Noncompliance with HUD's regulations in 24 CFR Part 135 may result in sanctions, termination of this contract for default, and debarment or suspension from future HUD assisted contracts.

G. With respect to work performed in connection with Section 3 covered Indian housing assistance, Section 7(b) of the Indian Self-Determination and Education Assistance Act (25 U.S.C. 450e) also applies to the work to be performed under this contract. Section 7(b) requires that to the greatest extent feasible (preference and opportunities for training and employment shall be given to Indians, and (ii) preference in the award of contracts and subcontracts shall be given to Indian organizations and Indian-owned Economic Enterprise. Parties to this contract that are subject to the provisions of Section 3 and Section 7(b) agree to comply with Section 3 to the maximum extent feasible, but not in derogation of compliance with Section 7(b).

## HIRING SCALE FOR SECTION 3 PARTICIPANTS TRAINING AND EMPLOYMENT OPPORTUNITIES (2/18/10)

The Southern Nevada Regional Housing Authority (SNRHA) has adopted the following scale for hiring that is to be used on all construction contracts, service contracts and professional service contracts that contain a labor component. It is expected that an appropriate number of residents and other low- and very-low-income individuals with particular qualifications or a willingness to begin unskilled labor will be able to participate in the SNRHA's contracted labor efforts.

| TOTAL CONTRACT/ SERVICE DOLLARS | Percentage of contract to base hiring requirements |
|---|---|
| Contract amount $25,000 but less than $100,000 | 6.0% of the contract amount |
| $100,000, but less than $200,000 | 5.5% of the contract amount |
| At least $200,000, but less than $300,000 | 5.0% of the contract amount |
| At least $300,000, but less than $400,000 | 4.5% of the contract amount |
| At least $400,000, but less than $500,000 | 4.0% of the contract amount |
| At least $500,000, but less than $1 million | 3.5% of the contract amount |
| At least $1 million, but less than $2 million | 3.0% of the contract amount |
| At least $2 million, but less than $4 million | 2.5% of the contract amount |
| $4 million or more | 2.0% of the contract amount |

The SNRHA has established four (4) ways in which a contractor may fulfill the Section 3 requirements as listed above. They are as follows:

1. Joint venture with a SNRHA resident-owned business. The business must be 51% or more owned by SNRHA Section 3 residents (includes all SNRHA housing programs) and receive a portion of the contract commensurate with the scale requirement outlined above; or

2. Direct hiring of SNRHA's Public Housing residents, Housing Choice Voucher participants, Affordable Housing residents and/or low and very low-income neighborhood residents based on the Section 3 Hiring Scale; or

3. Contractor incurs the cost of providing skilled training (State Board certified or similar) for residents in an amount commensurate with the sliding scale set forth in the Section 3 Hiring Scale; or

4. Contractor makes a contribution to the SNRHA's Section 3 Job Development Fund to provide assistance to residents to obtain training and employment. The level of contribution must be commensurate with the sliding scale set forth in the Section 3 Hiring Scale.

A contractor may fulfill their Section 3 obligation through a combination of these options but must meet all base requirements as set forth in this plan. When hiring, only the gross wages earned will be counted towards the Hiring Scale requirement. A prime contractor may also satisfy SNRHA resident hiring requirements through its subcontractors.

Furthermore, SNRHA has adopted the following threshold and scale for mandatory hiring that is to be used on all construction contracts, service contracts and professional service contracts that contain a labor component.

| **TOTAL CONTRACT/ SERVICE DOLLARS** | **Minimum Number of Hires** |
|---|---|
| $100,000, but less than $500,000 | 1 New Hire |
| At least $500,000, but less than $750,000 | 2 New Hires |
| At least $750,000, but less than $1 million | 3 New Hires |
| At least $1 million, but less than $2 million | 4 New Hires |
| At least $2 million, but less than $3 million | 5 New Hires |
| At least $3 million, but less than $4 million | 6 New Hires |
| For each additional $1 million over $4 million | 1 New Hire per $1 million |

The contractor's compliance will be evaluated based on this scale. This requirement is the minimum acceptable hiring scale; it is expected that most contractors will exceed this requirement.

## WHO CAN I HIRE?
## Resident Hiring Requirements

SNRHA's preference is to ensure that as many SNRHA residents as possible are employed. In an effort to further that goal, SNRHA has created the following required hiring preference tier. Contractors must exhaust higher priority tiers before being able to hire in lower tiers. A contractor will submit an Intent to Hire form to the Section 3 Coordinator who will make referrals based on this requirement from the Job Bank maintained by SNRHA and the qualifications set forth by the Contractor.

Tier 1 : Hire SNRHA Public Housing Residents, Housing Choice Voucher (aka Section 8) Participants or Affordable Housing Residents
Tier 2 : Hire eligible Section 3 residents from approved YouthBuild programs
Tier 3 : Hire non-SNRHA Section 3 residents residing in Clark County

If the Section 3 Coordinator is not able to provide qualified referrals for the position to be filled, they will certify that the Contractor has exhausted the higher priority tiers and allow the contractor to pursue hiring outside of SNRHA programs. Failure to obtain written approval to hire from Tier 3 beforehand will result in wages paid being deemed ineligible.

## HOW WILL SECTION 3 BE MONITORED AND ENFORCED?
## Compliance Requirements

The SNRHA requires contractors and vendors to implement progressive efforts to comply with Section 3. A Section 3 Coordinator will monitor and evaluate contractor compliance with established employment**,** training and resident hiring goals**.**

Each contract will be monitored closely to ensure ongoing compliance and prevent unforeseen issues during the contract or at the end of the contract period. In order to ensure attention to the compliance and efforts of the contractors, all service contracts and construction-based contracts that have specific terms and

schedules for performance that exceed 90 days are **expected to be compliant at 50% completion and then 100% prior to contract close-out**. More specifically, when the contract's progress or periodic schedule of payments meets or exceeds 50% of the total contract amount or billing exceeds 50% of the contract total, a contractor must also meet at least 50% of their Section 3 obligation to be considered compliant. If the contractor is not compliant at that midterm evaluation, SNRHA will follow the progressive non-compliance sanctions outlined in its comprehensive Section 3 Plan.

Contracts with specific terms and schedules that are 90 days or less in length will be monitored throughout their contract and must meet their obligations by the end of the initial term of the contract. All other contracts, such as indefinite quantities, task order and as needed professional services that do not have specific terms or schedules for performance will be evaluated for compliance throughout, but are expected to be compliant by the end date set in the contract. Multi-year contracts must achieve Section 3 compliance no less than annually.

These requirements apply to all four (4) ways a contractor may fulfill the Section 3 requirement. Contractors will not be able to request final payment or close-out their contract with SNRHA without Section 3 compliance. It is also the contractor's responsibility to request final compliance evaluation at contract close-out with the Section 3 Coordinator. Furthermore, those contractors who do achieve contract close-out while non-compliant will be fined per the sanctions outlined in the Section 3 Plan, and unable to receive a SNRHA contract award for the period of one (1) year following contract close-out.

**A complete copy of the SNRHA's Section 3 Plan & Policies is available in our website at www.snvrha.org**
**(Click Residents Link, Section 3 Program link)**

## SECTION 3 – CONTRACTOR INITIAL RESPONSE

**Failure to complete this document will lead to your bid being deemed non-responsive.**

### Contractor Information

Company Name (Contractor) _____ Contact Person _____

Address _____

City _____ State _____ Zip Code _____

Phone _____ Fax _____ E-mail _____

### Section 3 Commitment

To meet the requirements of Section 3 of the Housing Act of 1968 [12 U.S.C. 1701u], as amended, the terms of the contract, and pursuant to Southern Nevada Regional Housing Authority's policies outlined in the Section 3 Plan, the Contractor hereby agrees to provide the following opportunity or opportunities to low-income and low-skilled persons particularly those persons who are recipients of public housing:
(select all that apply)

- ❒ Joint venture with a SNRHA Resident-Owned Business (ROB). The business must be 51% or more owned by OHA public housing residents and receive 51% or more of the contract award
- ❒ Direct hiring of SNRHA's Public Housing residents, Housing Choice Voucher participants and/or low and very low-income neighborhood residents based on the Section 3 Hiring Scale

  Number of Hires Projected: _____
- ❒ Contractor incurs the cost of providing skilled training for residents in an amount commensurate with the sliding scale set forth in the Section 3 Hiring Scale

  Proposed Training Program: _____
  Proposed Training Cost: _____
- ❒ Contractor makes a contribution to the SNHRA's Section 3 Job Development Fund

**Upon award of the contract, the contractor will meet with SNRHA to develop the Section 3 Plan specific to the contract, including scheduled progress and compliance deadlines.**

Signature _____ Date _____

# ATTACHMENT B

# DRAWINGS

## (*see attached pdf file of drawings which are a part of this IFB package by reference*)

# ATTACHMENT C

# ASBESTOS AND LEAD-BASED PAINT SURVEY REPORT

Some building components in this property are known to contain asbestos and lead-based paint as described in the attached survey reports

Under this Invitation for Bid the Contractor will be responsible for the coordination and abatement of the asbestos materials required for removal in accordance with local, state, and federal regulations.

Contractor must advise all subcontractors and workers of procedures for working around the hazardous materials including asbestos and or lead-based paint which are not scheduled for abatement.
(See specific scope of work).

# ASBESTOS CONTAINING MATERIALS (ACM) AND LEAD-BASED PAINT (LBP) SURVEY REPORT

## SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY
## JONES GARDENS APARTMENT COMPLEX
## AND THE COMMUNITY CENTER
## MULTI-FAMILY RESIDENCES
## LAS VEGAS, NEVADA

**ATC PROJECT NO. 085.40370.0002 TASK ORDER-9**

**DECEMEBER 27, 2011**


Prepared by:

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Suite M
Las Vegas, Nevada 89120
Phone (702) 798-5750
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Prepared for:

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# 1.0 INTRODUCTION

ATC Associates Inc. (ATC) was retained by the Southern Nevada Regional Housing Authority (client) to conduct a hazardous material survey for multiple single-family residences throughout the Las Vegas Valley. The purpose of the project was to determine the presence of asbestos and/or lead based materials at the sites to facilitate the development of abatement specifications and the eventual removal of all impacted hazardous material prior to the renovation activities.

The scope of the project was to identify any accessible suspect asbestos-containing materials (ACM) and lead based materials, at the above-referenced sites.

This hazardous materials survey was conducted on November 14 through 17, 2011by Mr. Edward Byers, and Mr. Robert De La Torre, a Nevada licensed asbestos and lead consultant.

All field work and report preparation was performed under the direction and guidance of Mr. Andrew Stuart (Senior Project Manager).

The following table is a list of the properties:

| Selected Addresses | | |
|---|---|---|
| 1750 Marion Drive Unit 3A | 1750 Marion Drive Unit 7A | 1750 Marion Drive Unit 7B |
| 1750 Marion Drive Unit 7C | 1750 Marion Drive Unit 9A | 1750 Marion Drive Unit 13B |
| 1750 Marion Drive Unit 16A | 1750 Marion Drive Unit 16B | 1750 Marion Drive Unit 25C |
| 1750 Marion Drive Unit 26A | 1750 Marion Drive Community Center | |

# 2.0 ASBESTOS

## 2.1 Sampling Methodology and Analysis

ATC typically surveys buildings in teams of two, one person documenting the proceedings of the survey, the other performing bulk sampling and other miscellaneous activities. The team performs a preliminary visual inspection of the building impacted to identify and quantify suspect ACM. A sampling strategy is then developed to provide representative sampling of the suspect ACM in accordance with the methods and procedures identified in the Asbestos Hazard Emergency Response Act (AHERA).

ATC field staff utilized semi-destructive sampling methods to collect samples of accessible suspect asbestos-containing building materials. Some areas of the site, e.g. edges of roof, pipes, chases, etc. may not have been accessible at the time of the inspection.

Each sample is placed in a container; the container is sealed, labeled and placed in a storage bag. Samples are documented by entering the sample data on a bulk log, including a description of the material, sample number, location, condition, accessibility, friability, potential for damage, and quantity. Typically, the sample location is marked on an 8-1/2 x 11 inch not-to-scale floor plan. Throughout the process, special care is taken to prevent cross-contamination of the collected samples. Sampling equipment is cleaned after each sample is obtained. In addition, sample containers are placed directly beneath each sample location, when feasible, to collect any materials which may become dislodged during the sampling process. Any debris generated by the sampling is cleaned by wet-cleaning methods. Sample locations are appropriately repaired.

All bulk sample analysis is conducted by Polarized Light Microscopy (PLM) with dispersion staining as described in the "*Method for the Determination of Asbestos in Bulk Building Materials*" (EPA-600/R-93/116, July 1993). A suspect material is immersed in a solution of known refractive index and subjected to illumination of polarized light. The color displayed enables mineral identification. Quality control samples at a rate of 10% or one per project, whichever is greater, are reanalyzed by a second, independent analyst.

Any material that contains greater than one percent asbestos is considered an ACM and must be handled according to OSHA, EPA, and applicable state and local regulations.

The amended National Emission Standard for Hazardous Air Pollutants (NESHAP), November 20, 1990, included a requirement that when the asbestos content of a bulk sample material is determined using procedures outlined and the asbestos content is estimated to be less than 10% by a method other than point counting, the parties legally responsible for a building (owner/operator) may (1) elect to assume the amount to be greater than 1% and treat the material as a regulated asbestos-containing material, or (2) require verification of the amount by the Point Counting method. The purpose of this procedure is to minimize false negative analysis (reporting the samples as containing less than 1% asbestos for asbestos-containing samples actually containing greater than 1%) and false positives (reporting the sample as containing greater than 1% asbestos for samples containing less than 1% asbestos). Point Counting was included in NESHAP in response to an EPA study that found an unacceptable amount of false negative and false positive analyses by methods outlined in the interim method.

The samples were analyzed by Carolina Environmental Inc. (CEILABS) located in Cary, North Carolina. CEILABS is certified by the National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos bulk fiber analysis. A copy of the laboratory accreditation is provided in Appendix A.

## 2.2 Results

ATC collected approximately 170 bulk samples from the site. The bulk samples were analyzed by Polarized Light Microscopy (PLM) with dispersion staining.

Material containing greater than one percent (>1.0%) asbestos by weight is considered positive in this report and defined as ACM, as previously described above.

A table detailing materials sampled and the location from which the samples were collected during the surveys are included in Table 2 of Appendix A. Table 2 lists the asbestos bulk sampling results. Material identified as ACM are denoted in bold. The asbestos laboratory analytical report and asbestos sampling logs of the materials sampled during the field survey are included in Appendix D.

## 2.3 Conclusions and Recommendations

Based on the ATC survey results, ACM was identified at the following addresses:

At 1750 Marion Drive Unit 13B, ten (10) percent asbestos (chrysotile) was detected in the black roof penetration sealant located at the exterior roof area. The area consists of approximately 10 square feet of penetration sealant. The black sealant is considered Category I non-friable ACM.

Tables for each address are included in Appendix A. Copies of the laboratory analytical reports and sample logs are included in Appendix D.

ATC recommends preparation of an operations and maintenance plan for the in-place management of the ACM material noted above. However, if the ACM material noted above will be disturbed, ATC recommends removal of the noted ACM material prior to any renovation and/or demolition activities. Contractors must use asbestos safe work practices when disturbing the material listed above.

If additional suspect materials are observed by the contractor during renovation and/or demolition activities, the consultant should be notified and the presence of these materials should be verified.

## 3.0 LEAD-CONTAINING MATERIALS

### 3.1 Sampling Methodology and Analysis

ATC's field technicians, Mr. Robert De La Torre and Mr. Edward Byers conducted visual inspections of the multiple single family residences. During the survey ATC technicians observed evidence of cracking and/or peeling paint finishes within the interior and exterior of the residences. ATC's field staff utilized an X-Ray Fluorescence (XRF) Analyzer device to analyze of suspect lead-based paint materials.

The materials analyzed and the location from which the samples were collected during the surveys are included in Appendix B. Materials identified to be lead based are denoted in bold. The XRF sampling logs of the materials sampled during the field survey are included in Appendix B.

The lead testing was performed on-site using an XRF Analyzer on various surfaces, according to the procedures identified in Chapter 7 of the *Housing and Urban Development (HUD) Guidelines for the Evaluation and Control of LBP in Housing*, 1997 Revision, and the XRF-specific *Performance Characteristic Sheet* (PCS) methodology for the LPA-1 Lead Paint Analyzer.

The LPA-1 Lead Paint Analyzer is a complete lead paint analysis system, which quickly, accurately, and non-destructively measures the concentration of LBP on surfaces. The LPA-1 relies on the measurement of the K-shell X-rays to determine the amount of lead present in the painted surface. K-shell X-rays can penetrate many layers of paint and allow a good measurement of the lead content of paint to be made without being significantly affected by the thickness or number of layers of paint on the surface of the sample.

The LPA-1 has the ability to analyze and compute corrections for the differences in the energy spectrums relating to different substrates. This analysis of the energy spectrum means that the lead paint reading displayed on the instrument already accounts for any substrate effects and no correction is required by the operator. The LPA-1's field of view is limited to a depth of 3/8", deep enough to handle virtually all painted surfaces, but not prone to detect lead objects located behind the surface.

Upon arrival at the job site, a "calibration test" was performed to assure that the instrument was operating properly. A series of three calibrated readings were taken at the start of the survey, mid shift, and three more calibration check readings were taken near the end of the sampling sequence. Test measurements consisting of 30 seconds per measurement were taken the NIST Paint Film Standard (SRM No. 1332) as required by the instrument's PCS. The individual readings and an average of the three readings were recorded and compared to standards.

In all cases the instrument was functioning within the standard deviation as defined by the manufacturer and the PCS. All validation readings were recorded in a logbook, which accompanies the instrument. If for any reason the XRF does not pass the calibration procedures, it is ATC's policy to replace that instrument with an XRF that passes the above criteria for calibration. HUD developed the PCS for use with the specific instrument used for testing. ATC also utilized a Niton XLP 300 AW hand held analyzer in the beginning of these surveys.

### 3.2 XRF Analysis Results

ATC analyzed approximately 435 XRF paint and surface samples from the site. The paint and surface samples were analyzed using a Niton XLP 300 AW hand held analyzer. A copy of the XRF paint and surface results are included in Appendix B.

Paint materials containing greater than 1.0 $mg/cm^2$ is considered lead-based paint in this report and as previously described above.

LBP was detected at levels greater than 1.0 $mg/cm^2$ in the wall tiles of the bathrooms at 1750 Marion Drive Community Center.

The detected lead levels, the materials sampled and the location from which the samples were collected during the surveys are included in Appendix B. Materials identified as containing lead-based paint are denoted in bold.

### 3.3 Conclusions and Recommendations

Based on the ATC survey results, the materials identified by XRF Analyzer listed in table (Appendix B) meet the definition of lead-based paint.

The United States Department of Housing and Urban Development (HUD) define lead-based paint (LBP) as paints containing greater than 1.0 mg/cm2, as well as, paints containing greater than or equal to 0.5% lead by weight or 5,000 milligrams per kilogram (mg/kg) or parts per million (ppm) total lead. Paint containing less than these amounts is generally termed "lead-containing paint" (LCP).

Lead is a hazardous substance. Its condition, handling and disposal are regulated by Federal, State, and local agencies. Lead-containing materials, LBP and LCP generally do not pose a health risk unless the material is disturbed or sufficiently deteriorated to produce dust, which may become airborne and inhaled or ingested.

OSHA regulations do not provide a definition for "lead-based paint," but rather provide a Permissible Exposure Limit (PEL) for worker exposure to airborne lead particles of 50 micrograms per cubic meter of air (50 µg/m3 for an 8-hour time-weighed average). The OSHA Lead Construction Standard also lists an Action Level of 30 µg/m3 for an 8-hour time-weighted average. All employees (workers) and supervisors who are engaged in lead related construction and shown to be exposed to lead at or above the Permissible Exposure Limit, shall be trained by state-accredited training providers and certified by the EPA.

If lead-based material, LBP will be impacted (activities such as such as demolition, sanding, sand /shot blasting, chipping or any other method of surface preparation which may cause potential airborne lead

concentrations to exceed the OSHA action level) during the building renovation, ATC recommends removal and replacement of those building materials denoted to be disturbed during the upcoming renovation and/or demolition activities, as well as, other surfaces of similar substrate, color, and condition. Contractor must use lead safe work practices when disturbing any of the materials listed above.

Work activities impacting the lead-based materials pose a potential exposure risk for workers. Workers trained in proper safety and respiratory techniques should perform work activities that may impact the LBP. All construction work where an employee may be occupationally exposed to lead must comply with OSHA requirements. This regulation requires initial employee exposure monitoring to evaluate worker exposure during work that disturbs lead-containing materials (lead present in detectable levels). Any disturbance to LBP surfaces or materials, such as demolition, sanding, sand /shot blasting, chipping or any other method of surface preparation which may cause potential airborne lead concentrations above current regulatory levels are prohibited by state law.

## 4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on information collected from the ACM and LBP survey, ATC concludes the following:

- The results of the asbestos survey conducted of the building located at 1750 Marion Drive Unit 13B in Las Vegas, Nevada, indicate that the following building materials included in Table 1. Table 1 list the ACM that was found to contain more than one percent asbestos by PLM analysis.

**TABLE 1: ASBESTOS MANAGEMENT RECOMMENDATIONS**
**SOUTHERN NEVADA HOUSING AUTHORITY**
**JONES GARDENS APARTMENT**
**LAS VEGAS, NEVADA**

| Material (Classification) | Location of Material | Condition | Friable Yes/No | Quantity (NESHAP Category) | Recommendations |
|---|---|---|---|---|---|
| **Roof Penetration Sealant (M)** | **Exterior Roof Area of Each Unit** | **Good** | **No** | **Approximately 10 Square feet Cat I** | **Preparation of an operations and maintenance plan, abatement prior to renovation and/or leave in place during demolition in accordance with NESHAP and OSHA.** |

s.f./l.f. = square feet/linear feet, ND = Non Detect, NA = No Analysis, NS = Not Sampled , VFT = Vinyl Floor Tile, * = Positive ACM by association, M= Miscellaneous, S= Surfacing, T= Thermal System Insulation, RACM= Regulated ACM, Cat. I= Category I Non-friable ACM, Cat. II= Category II Non-friable ACM, PACM = Presumed Asbestos –Containing Material.

ATC recommends that all the ACMs identified in the table above be maintained under a written Operations and Maintenance (O&M) program, by suitably trained personnel, until renovation necessitates removal or until the buildings are demolished.

- Based on the results of the ACM survey, ATC recommends preparation of an operations and maintenance plan for the handling of the ACM material. However, if the ACM materials will be disturbed, ATC recommends removal of the noted ACM material prior to any renovation and/or demolition activities.

If work deviates from areas previously sampled as directed by the client, those additional areas to be distributed should be sampled for ACM and LBP. Based on information collected from the hazardous

material survey, LBP was detected at levels greater than 1.0 mg/cm$^2$ in the wall tiles of the bathrooms at 1750 Marion Drive Community Center. ATC recommends the following:

- Based on the results of the LBP survey, ATC recommends removal and replacement of those building materials identified as LBP and planned to be disturbed during the upcoming renovation and/or demolition activities, as well as, other surfaces of similar substrate, color, and condition.

- If the wall or floor tiles containing LBP are not disturbed, than it is acceptable to leave them in place. However, if removed, ATC recommends that a properly trained person in lead abatement be hired to remove the materials and that they follow proper removal and disposal procedures.

A summary of the findings and recommendations for each of the units is provided in Appendix C.

## 5.0 LIMITATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with principles and practices in the fields of environmental science and engineering. The results, findings, conclusions, and recommendations expressed in the report are based only on conditions that were noted during the noted dates of fieldwork. This warranty is in lieu of all other warranties either expressed or implied. This company is not responsible for the independent conclusions, opinions, or recommendations made by others based on the results and designs presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does it warrant operations or conditions present of a type or at a location not investigated.

Reasonable effort is made by ATC personnel to locate and sample materials representative of the site structures. However, for any facility, the existence of unique or concealed materials or debris not observed by ATC is a possibility. ATC does not warrant, guarantee or profess to have the ability to locate or identify all concealed hazardous materials at the site. This report is intended for the sole use of the Southern Nevada Regional Housing Authority. This report is not intended to be utilized as a construction and/or bidding document, nor is this document designed to be used as a remediation or abatement specification. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

This inventory does not represent an exhaustive listing of types of materials that may be required to be removed from a building prior to renovation. Any conditions or materials that could not be visually identified on the surface were not inspected and may differ from those conditions or materials noted.

## 6.0 SIGNATURES

This report presents the results of the ACM and LBP survey that was prepared by ATC personnel, Mr. Edward Byers, Mr. Robert De La Torre, and reviewed by Mr. Andrew Stuart (CEM, LEED AP).

ATC appreciates the opportunity to be of service to Southern Nevada Regional Housing Authority on this project and looks forward to working with you on future assignments. In the meantime, if you have questions or comments regarding the information in this report or if we can be of further assistance, please do not hesitate to contact the undersigned in the ATC Las Vegas, Nevada office at (702) 798-5750.

Respectfully submitted,

**ATC ASSOCIATES INC.**

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Senior Project Manager
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Robyn Steiner, MSPH CIH
Senior Technical Reviewer

# ATTACHMENT D

# TECHNICAL SPECIFICATIONS

**00 01 10**

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**VOLUME 1**

**DIVISION 1 – GENERAL REQUIREMENTS**



FOR DIVISION 2 THROUGH DIVISION 33 PLEASE SEE TABLE OF CONTENTS - VOLUME 2 (IMMEDIATELY FOLLOWING DIVISION 1)

END OF TABLE OF CONTENTS

**SECTION 01 11 00**

**SUMMARY OF THE WORK**

## PART 1 - GENERAL

### 1.01 WORK UNDER THE CONTRACT

A. Work includes, but is not necessarily limited to the following:

The "Project" of which the "Work" of the Contract is titled SOUTHERN NEVADA REGIONAL HOUSING AUTHORITY – VCA COMPLIANCE UFAS/WHEELCHAIR ACCESSIBILITY AT JONES GARDENS

Provide labor, equipment and materials to bring Jones Gardens Complex located at 1750 Marion Drive, Las Vegas, Nevada into compliance with 504/UFAS/ADA wheelchair accessibility pursuant to the attached specifications and drawings. The scope of the work includes but is not limited to: Limited asbestos/lead-based paint abatement as required for the construction work, Install/modify accessible parking spaces, sidewalks/accessible routes, curb cuts, ramps and railings. Modify main entrance, public restrooms, laundry areas, common use buildings, common kitchen area, community room, manager's office and other common areas for wheelchair accessibility, renovate (5) units for persons with mobility impairments, as well as modify (3) units for hearing/visually impaired individuals. Install audible/visual smoke alarm devices in common areas and signage throughout the property. Unit renovations include electrical, mechanical, plumbing, casework floor finish and interior paint work

Scope of work shall incorporate HUD-mandated Federal requirements and Southern Nevada Regional Housing Authority requirements related to funding, including Davis-Bacon Act prevailing wage requirements as well as all functional, procedural and reporting requirements.

In addition, scope of work shall incorporate HUD-mandated requirements for accessibility verification under the Voluntary Compliance Agreement (VCA).

The scope of the work is pursuant to Article 4 and Article 5, Page 5 of the updated VCA and the Transition Plan dated June 15, 2009 therefore, the design for wheelchair accessibility must meet the Uniform Federal Accessibility Standards (UFAS) and/or Americans with Disabilities Act, whichever is more stringent. The documents are available at:

http://www.access-board.gov/ufas/ufas-html/ufas.htm

http://www.ada.gov/pubs/ada.htm

### 1.02 SITES

Jones Gardens
APN: 140-20-801-001
1750 Marion Drive, Las Vegas, NV.89115

### 1.03 CONTRACT DUTIES

A. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site, unless otherwise noted. The Contractor's use of the premises is limited only to the SNRHA's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.

1. Contractor and all of his/her subcontractors and personnel shall wear identification badges while on SNRHA property.

2. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed. The Contractor shall indicate and designate each construction location by clearly marking with barriers, rope, or other similar means and signage that establishes each construction area.

3. Keep driveways and entrances serving the premises clear and available to SNRHA employees at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on site.

4. Burial of waste materials on site shall not be permitted.

B. Restore all site amenities damaged during construction to a minimum of their condition prior to construction. These include, but are limited to:

Landscaping
Irrigation
Sidewalks
Curbs
Paving

C. Entry into any occupied dwelling unit shall be scheduled by the SNRHA. Contractor shall provide a general schedule of work for the project at least (7) days in advance of any work for review and approval by the SNRHA.

D. Coordinate all interruptions in utility services with the SNRHA to ensure that tenants remaining on the premises are not impacted by said interruption.

E. Use of the Existing Building: Maintain the existing building in a weather tight condition throughout the construction period. Repair damage caused by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

**1.04 CONTRACTOR'S DUTIES**

A. Except as specifically noted, provide and pay for:

1. Labor, materials, and equipment.

2. Tools, construction equipment, and machinery.

3. Other facilities and services necessary for proper execution and completion of work.

B. Give required notices.

C. Obtain and pay for permits related to City and County, including Business Licenses, hauling and dumping permits, as applicable. Provision of required permits and licenses, whether obtained by the Owner or the Contractor, shall be a part of the Contract requirements and shall be followed by the Contractor.

D.

E. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities, which bear on performance of work.

F. Attend job conference meetings, or such special meetings as may be required by the Owner.

G. Carry on the work as quietly as possible to prevent possible annoyance to adjacent properties. Avoid unnecessary noise at all times.

1. Comply with local noise abatement requirements.

H. Promptly submit notice in writing to the SNRHA of any observed variance in Contract Documents from legal requirements. It is Contractor's responsibility to make certain the Contract Specifications comply with codes and regulations.

I. Enforce strict discipline and good order among employees. Do not employ on job:

1. Unfit persons.
2. Persons not skilled in assigned task.

**1.05 SCHEDULE**

A. The sequence and scheduling of the work to be performed by the Contractor shall be subject to review by the Owner. Submit Progress Schedule in accordance with General Conditions.

**1.06 CONTRACTOR'S USE OF PERMITS**

A. Confine operations at site to area immediately adjacent to the proposed project. Develop and utilize construction access as shown on the drawing.

B. Do not unreasonably encumber site with materials or equipment.

C. Assume full responsibility for protection and safekeeping of products stored on premises.

D. Limit use of site (and premises) to allow:

1. Use of site shall be available, pending coordination with SNRHA Field Representative, from 8:00 a.m. to 5:00 p.m. Monday through Friday, five (5) days a week.

**1.07 NUISANCE WATER**

A. It is anticipated that nuisance water, such as rainfall, irrigation water, groundwater, and surface runoff may be encountered within the construction site during the period of construction under this Contract. Contractor shall, at all times, take all due measures to prevent delays in the progress of the work caused by such water. Contractors shall dispose of nuisance water at their own expense and without adverse effects upon the Owner's property, or any other property.

**END OF SECTION**

**SECTION 01 26 00**

**CONTRACT CONSIDERATIONS**

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Schedule of values.

B. Application for Payment.

C. Change procedures – See General Conditions.

D. Alternates.

### 1.02 SCHEDULE OF VALUES

A. Submit Schedule of Values in duplicate at the Pre-Award conference and such schedule to be approved by the SNRHA.

B. Format: Use the instructions given at the Pre-Award conference to establish the format.

C. Include with each line item, a direct proportional amount of Contractor's overhead and profit.

D. Revise schedule to list approved Change Orders, with each Application for Payment.

### 1.03 APPLICATIONS FOR PAYMENT

A. Submit three (3) copies of each application on HUD form 51001 "Periodical Estimate for Partial Payment."

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Payment Period: Monthly.

D. Include forms required by Owner.

E. These procedures will be discussed during the Pre-Award conference.

### 1.04 ALTERNATES

A. Accepted Alternates will be identified in Owner-Contractor Agreement.

B. Coordinate related work and modify surrounding work as required.

C. Schedule of Alternates: None.

**END OF SECTION**

**SECTION 01 26 13**

**REQUESTS FOR INTERPRETATION (RFI)**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Administrative and procedural requirements for handling and processing Requests for Interpretation (RFI).

B. RFI form is attached at the end of this Section.

C. Do not use RFI form during bidding. Direct questions during bidding phase as indicated in Contract Documents.

### 1.02 DEFINITIONS

A. RFI: Formal process used during construction phase to facilitate communication between Contractor and Architect or Owner's Representative with regard to requests for additional information and clarification of intent of Contract Documents (Drawings and Specifications).

### 1.03 PROCEDURE

A. When conditions require clarification of Contract Documents, comply with following:
1. Subcontractors, manufacturers, and suppliers shall submit request for additional information and clarification to Contractor.
2. Contractor shall contact Architect with requests for interpretation or additional information using the attached form. Architect will **not** accept requests for interpretation or information submitted directly from subcontractors, manufacturers, or suppliers.
3. Architect will provide response to Contractor.
4. Generate RFI by one source per project and number accordingly.
5. Submit one request for information or clarification per form.

B. Architect will review RFI from Contractor with reasonable promptness and Contractor will be notified in writing of decisions made.

C. Architect's written response to RFI shall not be considered as a Pricing Order or Pricing Directive, nor does it authorize changes in Contract Sum or Contract Schedule.

D. Contractor shall maintain a log of RFIs sent to and responses from Architect.

E. Contractor shall make every reasonable effort to answer questions pertaining to Construction Documents before submitting an RFI.

### 1.04 RFI FORM

A. Submit RFIs on attached form. Architect will not respond unless proper form is used.

B. If submittal form or format does not provide space needed for complete information, additional sheets may be attached.

## PART 2 PRODUCTS

Not Used.

## PART 3 EXECUTION

Not Used.

**END OF SECTION**

**SECTION 01 29 76**

**APPLICATIONS FOR PAYMENT**

## PART 1 - GENERAL

### 1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions apply to this Section.

### 1.02 SUMMARY

A. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.

B. Coordinate the "Schedule of Values" and Periodic Estimate for Partial Payment Applications with the Contractor's "Construction Schedule", list of Subcontracts and "Submittal Schedule".

C. The Contractor's Construction Schedule and Submittal Schedule are outlined in Section titled "Submittal".

### 1.03 SCHEDULE OF VALUES

A. Coordinate preparation of the "Schedule of Values" with preparation of the Contractor's "Construction Schedule".

B. Submit the "Schedule of Values" to the SNRHA for approval at the earliest feasible date, but in no case later than 7 days before the date scheduled for submittal of the initial Application for Payment.

C. Format and Content: Use the instructions given at the Preconstruction meeting to establish the format for the Schedule of Values.

D. Identification: Include the following Project Identification on the Schedule of Values:

SNRHA's Name and Address
Project Name and Location
HUD Project Number
Contractor's Name and Address
Date of Submittal

Arrange the Schedule of Values in a tabular form on HUD-51001, "Periodical Estimate for Partial Payment".

Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.

Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.

For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.

E. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum.

**1.04 APPLICATIONS FOR PAYMENT:**

A. Each Application for Payment shall be consistent with The Approved Schedule of Values and previous applications and payments as certified and paid for by the SNRHA. It shall also be accompanied by a certified payroll form.

The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction Work covered by each Application for Payment is the period indicated in the General Conditions.

C. Payment Application Forms: Use HUD-51001 as the form for Application for Payment and form WH-347 to submit certified payroll forms.

D. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action.

Entries shall match data on the Schedule of Values and Contractor' Construction Schedule. Use updated schedules if revisions have been made.

Payroll forms shall accompany each application for payment (Form WH-347 is included for Contractor's use.) **This payroll form must be submitted on a weekly basis whether or not it is accompanying a payment.**

Include amounts of Change Orders issued prior to the last day of the construction period covered by the application.

E. Transmittal: Submit one originally executed copy of each Application for Payment to the SNRHA by means ensuring receipt within 24 hours; one copy shall include waivers of lien and similar attachments.

Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to SNRHA.

F. Waivers of Mechanics Lien: With each application for Payment, submit waivers of mechanics lien from every Subcontractor or entity who may lawfully be entitled to file a mechanics lien arising out of the Contract, and related to the Work covered by the Payment.

Waiver Delays: Submit each Application for Payment with the Contractor's waiver of mechanics lien for the period of construction covered b the application.

Submit final Application for Payment with or proceeded by final waiver from every entity involved with performance of Work covered by the application who could lawfully be entitled to a lien.

Waiver Forms: Submit waiver of lien on forms, and executed in a manner, acceptable to SNRHA.

G. Initial Application for Payment: Administrative actions and Submittal that must precede or coincide with submittal of the first Application for Payment include the following:

List of subcontractors
List of principal suppliers and fabricators
Schedule of Values
Contractor's Construction Schedule (preliminary if not final)
Schedule of principal products
Submittal Schedule (preliminary if not final)
List of contractor's staff assignments
List of Contractor's principal consultants
Copies of building permits
Copies of authorizations and licenses from governing authorities for performance of the Work
Initial progress report
Any forms or schedules called for in "General Requirements" sections.

H. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, (a sample of which is included in this section) submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for SNRHA occupancy of designated portions of the Work.

Administrative actions and Submittals that shall proceed or coincide with this application include:

Warranties (guarantees) and maintenance agreements
Maintenance instructions given to Maintenance Supervisor with signed receipt
Receipt for any additional parts supplied
Final cleaning sign-off from Maintenance Supervisor
Application for reduction of retainage, and consent of surety
Advice on shifting insurance coverage
List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion

I. Final Payment Application: Administrative actions and Submittal, which must precede or coincide with submittal of the final payment Application for Payment include the following:

Completion of Project closeout requirements
Completion of items specified for completion after Substantial Completion
Assurance that unsettled claims will be settled
Assurance that Work not completed and accepted will be completed without undue delay
Transmittal of required Project construction records to SNRHA
Certified property survey
Proof that taxes, fees and similar obligations have been paid
Removal of temporary facilities and services
Removal of surplus materials, rubbish and similar elements
Certificate and Release form (sample included in this Section

## PART 2 - PRODUCTS

Not Used

**PART 3 - EXECUTION**

Not Used

**END OF SECTION**

**SECTION 01 31 13**

**COORDINATION AND MEETINGS**

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Coordination.

B. Pre-Construction meeting.

C. Progress meetings.

D. Examination.

E. Preparation – See Section 01 51 00 Construction Facility and Temporary Controls and 01 71 33 Protection of Adjacent Construction.

F. Cutting and patching – See Section 01 73 29 Cutting and Patching.

G. Alteration project procedures - See Section 01 35 16 Alteration Project Procedures.

### 1.02 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project to assure efficient and orderly sequence of demolition construction work.

B. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

C. Follow demolition plan for capping of utilities, according to Plan.

D. Coordinate completion and clean-up of work in preparation for Substantial Completion.

### 1.03 PRE-CONSTRUCTION MEETING

A. SNRHA will schedule a meeting after Notice of Award.

B. Attendance Required: Owner, Architect, Contractor, and Subcontractors.

### 1.04 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the work at maximum bi-monthly intervals.

B. SNRHA will make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

C. Attendance Required: Job Superintendent, major Subcontractors, suppliers, Architect, and Owner, as appropriate to agenda topics for each meeting.

## PART 2 - EXECUTION

### 2.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Beginning new work means acceptance of existing conditions.

B. Examine and verify specific conditions described in individual specification sections.

C. Verify that utility services are available, of the correct characteristics, and in the correct location.

**END OF SECTION**

**SECTION 01 32 16**

**PROGRESS SCHEDULE**

## PART 1 - GENERAL

### 1.01 METHODS

A. The Contractor shall comply with Project progress scheduling by use of one or the other of the two methods as specified herein; the particular method will be indicated elsewhere in the Contract Documents.

1. Critical Path Method

2. Bar Chart Schedule

### 1.02 PROGRESS SCHEDULE (CPM)

A. The Contractor shall coordinate the Project through the use of the Critical Path Method (CPM) of planning and scheduling. The Contractor shall utilize this method for the planning and scheduling of the Project and performing the Work in an orderly and expeditious manner. The progress status at various stages of the Project will be monitored by the Progress Schedule. The Project Schedule will be used to analyze delays and evaluate requests for extension of time.

B. Should the progress of this Work be delayed for any reason other than those mentioned in the General Conditions under Article 9.01 "Termination for Cause" and if such delays being the fault of the Contractor and resulting in the Contractor being unable to comply with the scheduled completion date, the Contractor agrees to take all necessary action, including additional overtime at the Contractor's expense, to ensure that the established completion date will be met. In order to meet the established completion date, the Contractor hereby agrees to employ such techniques as the Work may warrant.

It is not incumbent upon the SNRHA or it's Architect to notify the Contractor when to begin, to cease or resume work, nor give early notice of rejection of faulty work, nor in any way to superintend so as to relieve the Contractor of responsibility of any consequence of neglect or carelessness of the Contractor's employees. All materials and labor shall be furnished at such time that all Contract work may be properly and fully completed on Contract time. No claim for Contractor interference, direction or acceleration will be recognized from the CM's coordination and/or on site implementation of the Contract schedule activities.

C. SCHEDULING REQUIREMENTS

1. The Contractor will be required to utilize the Critical Path Method (CPM) of planning and scheduling. The Contractor will be required to submit five (5) sets of the CPM schedule. The schedule will include as many activities as necessary to make the schedule an effective tool for construction planning and monitoring the performance of each Subcontractor. The Contractor's schedule will include all pertinent activities, including, but not limited to milestone dates, submittal dates, required approval dates for shop drawings, purchasing activities, ordering and delivery dates, and activities interfacing or interacting with Subcontractor or services. The Contractor will update the schedule at every job meeting and will show a comparison between actual progress and scheduled progress. The schedule will be revised as required by the condition of the Work.

2. If, in the opinion of the SNRHA or the Mod Coordinator, the Work falls behind schedule, the Contractor will be required to submit, within one week, a revised schedule demonstrating its proposed plan to make up the slippage in the schedule and ensure the completion of Work within the Contract time. If the SNRHA finds the proposed plan not acceptable, the Contractor will be required to resubmit a revised schedule for approval. The revised schedule will require the Contractor to increase the work force, the construction plan and equipment, or the number of work shifts at no additional cost to the SNRHA. The Contractor will also bear all the cost for the producing of the preliminary schedule and any subsequent schedule.

3. The Contractor shall provide a preliminary schedule within one week from the award of the Contract and a final schedule one-week after approved schedule. The Contractor will then schedule a meeting with the Subcontractors, the SNRHA, and/or Architect to review the schedule. Any adjustments required based upon review will be made to the schedule as recommended to eliminate conflicts and to comply with the Contract dates and Project completion dates.

4. The Contractor's detailed schedule of work will include, but not be limited to, the following:

    a. Milestone dates

    b. Mandatory Sequencing (e.g., Excavation Must Precede Foundations) will be separate from desirable sequencing (i.e., crew movement, construction equipment constraints and other logic restraints).

    c. Testing Activities/Required Inspections (where applicable)

    d. Shop Drawing Preparation and Approval Activities

    e. Procurement Schedule (Order Dates, Deliveries, etc.)

    f. Requirement for any on Site Shutdown that may impact work

    g. Training or Instruction of School Personnel

    h. Anticipated Start and Completion Dates for each activity

    i. Anticipated durations in work days of each activity

    j. Final Inspection/Beneficial Occupancy

    After all networks and data are reviewed and this schedule agreed to, the Contractor shall process the information through a computer to develop the indicated early and late start and finish dates and float of the activities. The Contractor shall make adjustments to the Master (CPM) Network Schedule and the computer run to eliminate conflicts and to comply with the milestone dates and the Project completion date. After all adjustments have been made, the Contractor shall submit the final CPM Network Schedule and computer schedules to the SNRHA and/or Architect. This will be the official Project Schedule and shall be signed off by the Contractor and the Contractor's Subcontractors.

    The Contractor will update this schedule at monthly schedule meetings with the Subcontractors. This meeting will be attended by the SNRHA and/or Architect. The update will determine the actual status of the Project and will act as a tool in the decision making necessary to keep the Project on schedule.

5. The Contractor shall schedule a meeting to update the schedule at the end of the first month following issuance of the Official Project Schedule and every month thereafter as required (or at lesser intervals if deemed necessary). The Contractor shall have in attendance at these meetings the individual Subcontractors/Vendors who are intimately familiar with the Project and its current status and who have decision-making authority. These representatives will assist the SNRHA and CM in every manner to determine the actual status of the Project and make such decisions as may be necessary to keep the Project on schedule. The bi-weekly progress report forms must be filled in by the Subcontractor prior to the meeting to indicate the status of each activity as of the end of the month by indicating the remaining duration and the actual start and finish dates of all activities started and/or completed since the last update. This includes shop drawings, procurement of material, etc., as well as actual on-site construction activities.

6. All Subcontractors shall meet with the Contractor, the SNRHA and/or Architect and provide the information necessary to prepare a revised (updated) arrow diagram and computer-generated schedule listing showing:

    a. Approved changes in activity sequencing to reflect agreed upon schedule impact of either excusable delays, change orders, acknowledged differing site conditions or suspensions of Work.

    b. Changes in activity durations for unstarted or partially complete activities where agreed upon.

    c. The effect to the network of any delays to any activities in progress and/or the impact of known delays which are expected to affect future work.

    d. Changes to activity logic, where agreed upon, to reflect revision in the Contractor's plan, i.e., changes in activity duration, and activity sequence for the purpose of regaining lost time or improving progress, mitigating the effect of excusable delays or Contractor's preference.

    e. Changes to milestones, due dates and the overall Contract Completion Date, which have been agreed upon by the SNRHA since the last revision of the CPM schedule.

    f. Proposed effects (not approved) to the schedule of any delays, Change Orders or Contractor requested changes, which are being negotiated as to the extent, if any, of a Contract adjustment reflecting any increases or decreases in the cost or time of performance of the Contract. The Contract late completion date will not be adjusted due to any changes not approved by the SNRHA.

    The CPM Network Schedule shall accurately reflect the manner in which the Contractor intends to proceed with the Project and shall incorporate the impact of all delays and Change Orders as soon as these factors can be defined. All changes made to the schedule shall be subject to approval by the SNRHA prior to inclusion in the CPM Network Schedule.

7. When the SNRHA and the Contractor are unable to agree as to the amount of time to be allowed for delays and Change Order Work, or the manner in which this work is to be reflected on the arrow diagram, the scheduling shall reflect the logic and time durations furnished by the Contractor for the delays and Change Orders pending final decision by the SNRHA. If unapproved Contractor logic and time durations are used, the Contractor

agrees that any time delays to the Project; i.e., those which affect the time and performance of any of the Contracts as a responsibility of the Contractor until a final agreement has been made or a final decision rendered by the SNRHA regarding the manner in which the delays and Change Order work is to be reflected on the schedule. When this final decision has been made by the SNRHA, the CPM Network Schedule shall be revised in accordance with such decision and issued with a final analysis of the effect of the change on the Project.

8. If the Contractor desires to revise the logic of the approved CPM schedule so as to reflect a sequence of construction which differs from that originally agreed to, the Contractor must first obtain the approval, in writing, of all the Subcontractors whose work may be affected by the change and then must obtain the approval of the SNRHA.

9. Once each month, at the same time the network is updated, the Contractor shall make entries to identify those activities started by date and those completed by date during the previous period, to show the estimated time required to complete each activity started but not yet completed, to show activity percent completed and to reflect any changes in the arrow diagram approved in accordance with the preceding paragraph. After completion of the joint review, an updated Computer Schedule will be transmitted to all Subcontractors. The resultant monthly Computer Schedule and Network Schedule shall be recognized by the Contractor as solely the updated construction schedule to complete all remaining Contract work. In addition, once each month the Contractor shall furnish a narrative report. The narrative report will include a description of the amount of progress during the previous month in terms of completed activities in the plan currently in effect, a description of problem areas, current and anticipated delaying factors and their estimated impact on the performance of other activities and completion dates, and recommendations on corrective action for the Contractor. The SNRHA will review the Contractor's proposed corrective action for conformance with the Contract requirements. Approved corrective actions for Contractor are to be incorporated into the next schedule update. Failure of the Contractor to propose acceptable corrective actions for Contractor delays or slippages will be construed as a failure to properly schedule and prioritize the work in accordance with the requirements of the Contract Documents and it may cause the SNRHA to recommend corrective actions to maintain the overall project schedule. If the Contractor believes that the SNRHA direction constitutes a change, the Contractor shall furnish, within ten days, in writing, its own plan for corrective action. This plan is subject to approval by the SNRHA.

10. In addition, to this schedule, the Contractor, at every biweekly job meeting will be required to submit a two week schedule showing all scheduled activities for the following two weeks and a report of progress in the previous two weeks. It will be the responsibility of the Contractor to review these schedules and implement the coordination of the Subcontractors. The schedule will be submitted in a format approved by the SNRHA.

## 1.03 SCHEDULING REQUIREMENTS (BAR CHART)

A. The successful Contractor will be required to submit five (5) sets of a detailed Bar Chart Schedule. The schedule will include as many activities as necessary to make the schedule an effective tool for construction planning and monitoring the performance of each Subcontractor. The Contractor's schedule will include all pertinent activities, including, but not limited to, submittal dates, required approval dates of Shop Drawings, purchasing activities, ordering and delivery dates, and activities interfacing or interacting with Subcontractor or services. The Contractor will update the schedule at every job meeting and will show a comparison between actual progress and scheduled progress. The schedule will be revised as required by the condition of the Work.

B. If, in the opinion of the SNRHA or its Designated Representative, the Work falls behind schedule, the Contractor will be required to submit a revised schedule within one week demonstrating its proposed plan to make up the slippage in the schedule and ensure the completion of Work within the Contract time. If the SNRHA finds the proposed plan not acceptable the Contractor will be required to resubmit a revised schedule for approval. The revised schedule will require the Contractor to increase the work force, the construction plan and equipment or the number of work shifts at no additional cost to the SNRHA. The Contractor will also bear all the cost for the producing of the preliminary schedule and any subsequent schedules.

C. The Contractor will provide a preliminary schedule within one week from the award of the Contract and a final schedule one-week after approved schedule. The Contractor will then schedule a meeting with the Subcontractors, the SNRHA, to review the preliminary schedule. Any adjustment required based upon review will be made to the schedule as recommended to eliminate conflicts and to comply with the Contract dates and Project completion dates.

D. The Contractor's detailed schedule of work will include, but not be limited to, the following:

1. Crew movements/Construction Equipment and Manpower
2. Sequencing (e.g., Excavation Must Precede Foundations)
3. Testing Activities/Required Inspections (where applicable)
4. Shop Drawings Preparation and Approval Activities
5. Procurement Schedule (Order Dates, Deliveries, etc.)
6. Requirement for any on-Site Shutdowns that may impact work
7. Training or Instruction of School Personnel
8. Anticipated Start and Completion Dates for each activity
9. Anticipated Durations in work days of each activity
10. Final Inspection/Beneficial Occupancy

E. In addition to this schedule, the Contractor at every biweekly job meeting will be required to submit a two week schedule showing all scheduled activities for the following two weeks and a report of progress in the previous two weeks. It will be the responsibility of the Contractor to review these schedules and implement the coordination of the Subcontractors. The schedule will be submitted in a format approved by the SNRHA.

## 1.04 CONTRACTOR'S DAILY REPORTS

A. As soon as the Contractor has started work on the project, the Contractor shall submit to the SNRHA's Field Representative reports of the Work performed the previous day by any of the Contractor's employees, including the employees of the Subcontractors.

B. The reports shall be prepared by the Contractor's Superintendent and shall bear his signature. Each report shall contain the following information:

1. The type of materials and/or major equipment being installed by the Contractor and the total number of employees worked in each category on that particular day.

2. The names of the Subcontractors working and the type of materials and/or major equipment being installed, together with the total number of employees working for each subcontractor on that particular day.

3. The major construction equipment being used by each contractor and/or Subcontractor.

4. Work pertaining to a Change Order and/or work being performed under protest.

**END OF SECTION**

**SECTION 01 32 33**

**CONSTRUCTION PHOTOGRAPHS**

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Record digital photography for archival and pay request purposes.

B. Daily digital photography to define when construction visits are appropriate and for discussion.

C. Camera

D. Compact Disc

E. Technique

F. Submittals

### 1.02 RELATED SECTIONS

A. Section 01 29 76 - Applications for Payment

B. Section 01 33 00 – Submittals

C. Section 01 77 00 - Contract Close-Out: Project record documents.

### 1.03 DIGITAL PHOTOGRAPHY

A. Provide digital photographs of the site before any construction is started and throughout the progress of The Work. Digital photographs shall be of a quality acceptable to the Owner and Architect.

B. Digital Photographs should be taken within seven days of each monthly Application for Payment and should represent work completed during the period preceding the Application for Payment. Photographs should be taken throughout the progress of the Work, up to and including Substantial Completion. Include as a minimum, 24 photographs of the following construction milestones:

1. Site clearing
2. Excavations
3. Foundations
4. Framing
5. Stored Materials
6. Site Improvements
7. Enclosure of building
8. Interior views

9. Contractor's completion of any segment of the Work.

10. Substantial completion

C. Daily Digital photography should be taken daily and e-mailed to the Owner and Architect at the end of each construction day.

**1.04 CAMERA**

A. Digital: 1024 x 768 pixels minimum. Digital Camera shall have a minimum resolution of five (5) mega pixels with accurate time and date encoder.

1. Daily photographs shall be 2 megapixels minimum.

2. Pay request photographs shall be 4 megapixels minimum.

**1.05 COMPACT DISC**

A. Deliver two (2) Compact Discs with the close-out document submittals.

B. Catalog and index disc in chronological sequence; provide typed table of contents with pay request.

**1.06 TECHNIQUE**

A. Provide factual presentation.

B. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

**1.07 VIEWS**

A. Daily Digital Photographs:

1. Show work done that day only.

2. Show two (2) photographs minimum per dwelling unit each work day.

3. Show additional views to describe questions for discussion, discovery or as-built issues.

**1.08 SUBMITTALS**

A. Deliver two (2) Compact Discs (CD) with each Application for Payment.

1. Each photo to be identified with the project name, number, subject/phase of work, orientation of view, approximate time of view, date.

2. Store the digital photographs in JPEG format.

3. One (1) disc will be retained by Architect for file record.

B. Pay request pictures will be taken at approximately the same time of the month, each month.

## 1.09 CONCEALED CONDITIONS

A. Where concealed conditions not indicated on the Contract Documents result in contractor's request for additional cost and time, completely depict those conditions using photography.

B. Photograph before closing up walls showing piping, wiring and insulation.

## PART 2 - PRODUCTS

Not Used

## PART 3 - EXECUTION

Not Used

**END OF SECTION**

**SECTION 01 33 00**

**SUBMITTALS**

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Proposed Products list.

D. Shop Drawings.

E. Product Data.

F. Samples.

G. Manufacturer's installation instructions.

H. Manufacturers' certificates.

### 1.02 RELATED SECTIONS

A. Section 01 77 00 - Contract Close-Out: Contract warranties, bonds, manufacturers' certificates, and closeout submittals.

B. Section 01 78 36 – Warranties and Bonds: Contract warranties, bonds, manufacturers' certificates, and closeout submittals.

### 1.03 SUBMITTAL PROCEDURES

A. Transmit each submittal with Architect/Engineer accepted form.

B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.

C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

D. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

E. Schedule submittals to expedite the Project, and deliver to Architect/Engineer at business address. Coordinate submission of related items.

F. For each submittal for review, allow 15 days excluding delivery time to and from the contractor.

G. Identify variations from Contract Documents and Product or system limitations, which may be detrimental to successful performance of the completed Work.

H. Provide space for Contractor and Architect/Engineer review stamps.

I. Revise and resubmit, identify all changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with provisions.

K. Submittals not requested will not be recognized or processed.

## 1.04 CONSTRUCTION PROGRESS SCHEDULES

A. Submit initial schedule in duplicate within 15 days after date of Owner-Contractor Agreement.

B. Revise and resubmit as required.

C. Submit revised schedules with each Application for Payment, identifying changes since previous version.

D. Submit a computer-generated horizontal bar chart with separate line for each major section of Work or operation, identifying first work day of each week.

E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

F. Indicate estimated percentage of completion for each item of Work at each submission.

G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.

## 1.05 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, model number of each product, and identify specification section number, as appropriate.

B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, reference standards, and identify specification section number, as appropriate.

C. Include itemized listing of required submittals under each product and/or specification number, as appropriate.

## 1.06 SHOP DRAWINGS

A. Submit the number of opaque reproductions, which Contractor requires, plus three copies, which will be retained by Architect/Engineer.

B. Shop Drawings: Submit for review. After review, produce copies and distribute in accordance with the SUBMITTALS article above and for record documents purposes described in Section 01 77 00 - Contract Close-Out.

C. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

## 1.07 PRODUCT DATA

A. Submit the number of copies, which the Contractor requires, plus two copies, which will be retained by the Architect/Engineer.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

C. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

D. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01 77 00 - Contract Close-Out.

## 1.08 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

B. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect/Engineer selection.

C. Include identification on each sample, with full Project information.

D. Submit the number of samples specified in individual specification sections; one of which will be retained by Architect/Engineer.

E. Reviewed samples which may be used in the Work are indicated in individual specification sections.

## 1.09 MANUFACTURER INSTALLATION INSTRUCTIONS

A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Architect/Engineer in quantities specified for Product Data. Provide duplicate copies for project close-out as described in Section 01 78 36 Warranties and Bonds: Form of Submittals.

B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

## 1.10 MANUFACTURER CERTIFICATES

A. When specified in individual specification sections, submit certification by manufacturer to Architect/Engineer, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. ertificates may be recent or previous test results on material or Product, but must be acceptable to Architect/Engineer.

## PART 2 - PRODUCTS

Not Used

**PART 3 - EXECUTIONS**

Not Used

**END OF SECTION**

**SECTION 01 34 00**

**SHOP DRAWINGS AND SAMPLES**

## PART 1 - GENERAL

### 1.01 CONTRACTOR SUBMITTAL

A. The Contractor shall submit the Shop Drawings, technical data, and Samples required by the Contract. The Contractor shall adhere to all submittal and scheduling requirements for Shop Drawings and Samples. After examination of such Shop Drawings and samples by the SNRHA, or the SNRHA's Designated Representative, and the return of such items by the SNRHA to the Contractor, the Contractor shall make corrections indicated and shall furnish to the SNRHA the required number of corrected copies of Shop Drawings and Samples. Paint and carpet color selection must be approved by the SNRHA prior to installation.

### 1.02 SHOP DRAWINGS

A. Shop Drawings shall be accompanied by a letter of transmittal to the SNRHA or the SNRHA's Representative requesting approval and date approval is desired.

B. Each Shop Drawings and letter of transmittal shall be identified with the following information:

1. Project title.

2. Contract name.

3. Date of the drawing, including dates of any revisions.

4. Name of Contractor, name of Subcontractor, material supplier and manufacturer, as applicable.

5. Name of person or firm preparing Shop Drawings.

6. Contract Drawing numbers and Specifications, Section Division and Paragraph numbers used as references in preparing Shop Drawings, and titles of items to which the Shop Drawings refer.

C. Shop Drawings shall show the design, dimensions, connections and other details necessary to ensure that the Shop Drawings accurately interpret the Contract Documents and shall also show adjoining Work in such Detail as required to provide proper connections with said adjoining Work. Where adjoining connected Work requires Shop Drawings, such Shop Drawings shall be submitted to the SNRHA or the SNRHA's Representative for approval at the same time so that connections can be checked.

D. The Contractor shall verify all field measurements. Measurements available prior to submittal of Shop Drawings shall be shown and so noted on the Shop Drawings. Measurements not available prior to submission of Shop Drawings shall be noted on the Shop Drawings as not available and such measurements shall be obtained prior to fabrication.

E. The Contractor shall submit manufacturer's drawings and specifications when necessary to fully explain apparatus and equipment required by the Work. These manufacturer's

drawings and specifications shall be treated as Shop Drawings. Manufacturer's catalog numbers alone are not acceptable as sufficient information for compliance with this requirement.

**1.03 PROCEDURE FOR SUBMITTAL AND APPROVAL OF ALL SHOP DRAWINGS**

A. After approval of the required Shop Drawings Schedule, the Contractor shall submit one clear sepia transparency and two prints of Shop Drawings to the SNRHA, or designated Representative for review and approval. A satisfactory Shop Drawing will be stamped "Approved" or "Approved As Noted", and dated; the sepia transparency and one copy hereof will be returned to the Contractor.

B. Should the Shop Drawings not be approved by the SNRHA or designated Representative it will be stamped "Revise and Resubmit" and one set of such Shop Drawings will be returned to the Contractor with the necessary corrections and changes to be made indicated thereon.

C. The Contractor shall make such corrections and changes and again submit one sepia transparency and two prints of Shop Drawings for the approval of the SNRHA. The Contractor shall revise and resubmit the Shop Drawings as required by the SNRHA or designated Representative until approval thereof is obtained. However, Shop Drawings which have been stamped "Approved As Noted" shall be considered "Approved" Shop Drawings and need not be revised and resubmitted.

D. The Sepia transparency of any approved Shop Drawing will be returned to the Contractor for the Contractor's distribution; such approved sepia transparency will be stamped and dated by the SNRHA or the SNRHA's Representative.

**1.04 DISTRIBUTION OF APPROVED SHOP DRAWINGS**

A. Approved Shop Drawings shall be distributed as follows by the Contractor:

1. One (1) copy for the SNRHA's Field Representative.

2. One (1) copy for the SNRHA's main office.

3. One (1) copy for the SNRHA's designated Review Representative.

B. Copies of Transmittals - Copies of all Shop Drawing transmittal letters from the Contractor shall be sent to the SNRHA's Field Representative.

C. No work called for by the Shop Drawings shall be accomplished until approval of the said Drawings by the SNRHA or Designated Representative is given.

D. Variations - If the Shop Drawings show variations from the Contract requirements because of standard shop practice, or other reasons, the Contractor shall make specific mention of such variations in the letter of transmittal.

E. Responsibility of Contractor - The approval of Shop Drawings will be general and shall not relieve the Contractor of responsibility for the accuracy of such Shop Drawings, nor for the proper fitting and construction of the Work, nor of the furnishing of materials or Work required by the Contract and not indicated on the Shop Drawings. Approval of Shop Drawings shall not be construed as approving departures from the Contract Drawings, Supplementary Drawings or Specifications.

F. Shop Drawing Schedule - To enable the Work to be transacted in an orderly and expeditious manner, the Contractor shall within seven (7) days after the Notice to Proceed, unless otherwise directed by the SNRHA or Designated Representative, submit a proposed progress schedule showing the anticipated time of commencement and completion of the submission of Shop Drawings for each of the various operations to be performed under the Contract.

The Shop Drawing schedule shall be interfaced with the Construction Progress Schedule required by another Article in the General Requirements.

G. Procedure for preparing, forwarding, checking and returning of all Shop Drawings shall be generally as follows:

1. The Contractor shall make available to the Contractor's Subcontractors the necessary Contract Documents and have them determine dimensions and conditions in the field, particularly with reference to coordination with other trades or work under other contracts;

2. The Contractor shall direct the Subcontractors to prepare Shop Drawings for submission to the SNRHA or the SNRHA's Representative, in accordance with the requirements of these "General Requirements".

3. The Contractor shall also direct the Contractor's Subcontractors to flag or circle corrections made on all resubmissions for approval, so as to be readily seen, and that the symbol "Sub" be used to identify the source of correction or information that has been added.

4. The Contractor shall:

   a. Review and be responsible to the SNRHA for information shown on Subcontractor's shop and installation drawings and manufacturer's data, and also for conformity to Contract Documents.

   b. Flag corrections made on all submissions for approval, so as to be readily seen, use the symbol "GC", "PL", "MECH" and "EL" to indicate that the correction and/or information added was made by the respective Subcontractor.

   c. Clearly designate which trade is to perform the work when the use of "Work by Others" or other similar phrases are indicated on the Drawings before submission to the SNRHA's Representative.

   d. Stamp submissions "Recommended for Approval", date and forward required copies to the SNRHA's Representative.

5. In order to expedite shop drawing procedures, the Contractor shall write a bi-weekly Shop Drawing status letter to the SNRHA, with copies to the Field Representative, containing the following subject matter:

6. A list of all Shop Drawings which have been sent to but not returned by the SNRHA, giving name of the Subcontractor, Drawing number, title and date of submission.

7. An indication of the desired priority of the return, if necessary.

Note: The status letter shall be prepared and sent at a given time, preferably Friday afternoon, to enable the SNRHA to receive the letter on Monday morning. This procedure shall be maintained throughout the active Shop Drawing period of construction.

## 1.05 SAMPLES

A. Samples shall be accompanied by a letter of transmittal to the SNRHA's Representative requesting approval, and date approval is desired.

B. Each sample shall be labeled with the following information:

1. Project title.

2. Contract name.

3. Date of submission.

4. Name and quality of the material.

5. Name of Contractor, name of Subcontractor, Material Supplier and Manufacturer, as applicable.

6. Contract Drawing numbers and Specification Section, Division and Paragraph numbers used as reference in preparing samples.

C. Samples on Display - When Samples are specified to be equal to samples in the office of the SNRHA, they shall be carefully compared to such samples for verification that they are equal in all respects.

D. Samples shall be of sufficient size and quantity to show the quality, type, color, finish and texture of the material required to be furnished by the Contractor pursuant to the Contract. Furnish specific sizes and quantities where indicated in the respective technical Sections.

E. Valuable samples, such as hardware, plumbing and electrical fixtures, not destroyed by inspection or test, will be returned to the Contractor and may be incorporated into the Work after all questions of acceptability have been settled, providing suitable permanent records are made as to location of the samples, their properties, and other pertinent information.

## 1.06 CONTRACTOR REVIEW

A. The Contractor shall review, verify and determine all field measurements, field construction criteria, materials, catalog numbers and similar data, shall coordinate each Shop Drawing and sample with the requirements of the Contract and shall determine whether or not such Shop Drawings are in conformity with the provisions of the Contract before submitting the Shop Drawings to the SNRHA, or the SNRHA's Designated Representative, for approval.

## 1.07 CONTRACTOR RESPONSIBILITY

A. The SNRHA's approval, or review by the SNRHA's Designated Representative, of Shop Drawings and samples shall not relieve the Contractor of responsibility for any deviation from the requirements of the Contract. The Contractor shall be responsible for the accuracy of the Shop Drawings and Samples and for the conformity of Shop Drawings and Samples

with the Contract unless the Contractor has notified the SNRHA of the deviation in writing at the time of submission and has received from the SNRHA written approval of the specified deviations. The SNRHA's approval shall not relieve the Contractor of responsibility for errors or omissions in the Shop Drawings and Samples.

**1.08 COMMENCEMENT OF WORK**

A. No portion of the Work shall be commenced until required Shop Drawings and Samples are approved by the SNRHA.

**END OF SECTION**

**SECTION 01 35 16**

**ALTERATION PROJECT PROCEDURES**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Products for patching and extending Work.

B. Examination and Preparation.

C. Installation.

D. Transitions and Adjustments.

E. Repair of damaged surfaces.

F. Finishes and Cleaning.

## PART 2 PRODUCTS

### 2.01 PRODUCTS FOR PATCHING AND EXTENDING WORK

A. New Materials: As specified in Product sections. Match existing Products and Work for patching and extending Work.

B. Type and Quality of Existing Products: Determine by inspecting and testing Products where necessary, referring to existing Work as a standard.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Verify that demolition is complete and areas are ready for installation of new Work.

B. Beginning of restoration Work means acceptance of existing conditions.

### 3.02 PREPARATION

A. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

C. Remove debris and abandoned items from area and from concealed spaces.

D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

E. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity. Insulate ductwork and piping to prevent condensation in exposed areas.

## 3.03 INSTALLATION

A. Coordinate work of alterations and renovations to expedite completion sequentially and to accommodate Owner occupancy.

B. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition.

C. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material with a neat transition to adjacent finishes.

D. Recover and refinish exposed mechanical and electrical work exposed accidentally during the work.

E. Install Products as specified in individual sections.

## 3.04 TRANSITIONS

A. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.

B. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and make recommendation to Owner.

## 3.05 ADJUSTMENTS

A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls and ceilings to a smooth plane without breaks, steps, or bulkheads.

B. Where a change of plane of 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Architect's review.

C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.

## 3.06 REPAIR OF DAMAGED SURFACES

A. Patch or replace portions of existing surfaces that are damaged, lifted, discolored or showing other imperfections.

B. Repair substrate prior to patching finish.

## 3.07 FINISHES

A. Finish surfaces as specified in individual Product sections.

B. Finish patches to produce uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

## 3.08 CLEANING:

A. In addition to final cleaning specified in Section 01 77 00 Contract Close-Out, clean areas of work daily as specified in Section 01 51 00 Construction Facility and Temporary Controls.

**END OF SECTION**

**SECTION 01 35 33**

**ENVIRONMENTAL PROCEDURES**

## PART 1 GENERAL

### 1.01 SECTION INCLUDES

A. Indoor Air Quality (IAQ) Requirements.

B. Carcinogenic and Toxic Materials.

C. Emission Rate Test Methods.

D. Dry Materials.

E. Emission Rate Standards.

### 1.02 REFERENCES

A. National Ambient Air Quality Standard (U.S. EPA, Code of Federal Regulations, Title 40, Part 50).

B. Industrial Workplace Standard (Reference: American Conference of Governmental Industrial Hygienists, 6500 Glenway, Building D-7, Cincinnati, OH 45211-4438).

C. International Agency for Research on Cancer list of Chemical Carcinogens.

D. Carcinogen List of the National Toxicology Program.

E. Reproductive Toxin List of the Catalog of Teratogenic Agents.

F. U.S. Environmental Protection Agency (EPA-600/8-89-074).

### 1.03 INDOOR AIR QUALITY (IAQ) REQUIREMENTS

A. Interior construction materials, finishes, and furnishing including partitions, partition coverings, insulation, flooring, floor coverings, wall covering, ceiling tiles, adhesives, sealants, glazes, paints, and similar materials shall be designed, manufactured, handled, and installed in such a manner to produce the least harmful or annoying effects on the occupants of the building.

B. Make written notification of these requirements to all appropriate suppliers of these materials to ensure that compliance is obtained from the manufacturers.

C. All materials shall emit the lowest, yet technologically achievable, emissions of particles and chemical vapors.
   1. As a minimum, materials shall meet emission rate standards set forth below.
   2. All emission rate calculations shall assume 900 $ft^3$ (25.49 $m^3$) to be the work station volume for determination of Product loading.

## 1.04 EMISSION RATE STANDARDS

A. Formaldehyde Emission Rate Standard: Product emission rate measured in $mg/m^2/hr$ shall not result in an indoor air concentration level of formaldehyde greater than 0.1 ppm at the anticipated loading ($m^2/m^3$ within the building) within 30 days of installation.

B. Total Volatile Organic Content (VOC) Emission Rate Standard: Product emission rate measured in $mg/m^2/hr$ shall not result in an indoor air concentration level greater than 0.5 $mg/m^3$ of the total volatile organic compounds at the anticipated loading ($m^2/m^3$ within the building) within 30 days of installation.

C. 4 Phenyl Cyclohexene (4-PC) Emission Rate Standard: Product emission rate measured in $mg/m^2/hr$ shall not result in an indoor air concentration level of 4-PC greater than 0.1 ppb at the anticipated loading ($m^2/m^3$ within the building) within 30 days of installation.

D. Regulated Pollutant Standard: Any pollutant regulated as a primary or secondary outdoor air pollutant shall meet an emission rate that will not generate an air concentration greater than that promulgated by the National Ambient Air Quality Standard.

E. Otherwise Unmentioned Pollutant Standard: Any pollutant not specified above shall meet an emission rate standard that will not produce an air concentration level greater than 1/10 the Threshold Limit Value (TLV) Industrial Workplace Standard at the anticipated loading ($m^2/m^3$ within the building) within thirty (30) days of installation.

# PART 2 PRODUCTS

## 2.01 CARCINOGENIC AND TOXIC MATERIALS

A. For all interior design materials, furnishings, and finishes, disclose in writing to Owner prior to installation of such materials, furnishings, and finishes any detectable amounts of substances emitted into the indoor air which are listed on any of the following.
   1. International Agency for Research on Cancer List of Chemical Carcinogens, or
   2. Carcinogen List of the National Toxicology Program, or
   3. Reproductive Toxin List of the Catalog of Teratogenic Agents.

## 2.02 DRY MATERIALS

A. "Dry" Materials:
   1. Do not install "dry" furnishing and finishing materials, such as carpet, acoustical panels, textiles, and so forth, until "wet" materials (adhesives, sealants, glazes, caulks, paint, and so forth) have been applied and allowed to dry to the extent feasible and in accordance with good building practices.
   2. Choose drying times so that pollutant emission rates as specified for IAQ are achieved prior to installation of the "dry" furnishing and finishing materials.

B. Pre-Conditioning: All dry furnishing and finishing materials shall be allowed to "air out" or pre-condition prior to installation in the building.

## 2.03 EMISSION RATE TEST METHODS

A. All emission rate testing specified shall be completed according to the dynamic environmental chamber technology as prescribed by the U.S. EPA.

B. Make data available to Owner for review and approval.

## PART 3 EXECUTION

Not Used.

**END OF SECTION**

## SECTION 01 42 00

## REFERENCE STANDARDS AND STATUTORY REQUIREMENTS

### PART 1 GENERAL

### 1.01 REQUIREMENTS IN GENERAL

A. Comply with and give notices required by laws, ordinances, rules, regulations, and lawful orders of public authorities bearing on performance of the Work.

B. It is not Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, building codes, and rules and regulations. However, if Contractor observes that portions of the Contract Documents are at variance therewith, Contractor shall promptly notify Owner in writing, and necessary changes shall be accomplished by appropriate Modification.

C. If Contractor performs Work knowing it to be contrary to laws, statues, ordinances, building codes, and rules and regulations without such notice to Architect and Owner, Contractor shall assume full responsibility for such Work and shall bear the attributable costs.

D. Permits and Fees: Comply with requirements specified in the General Conditions.

E. Taxes: Comply with requirements specified in the General Conditions.

F. Business Regulations:
1. Comply with all federal, state, and local laws relative to conducting business in Clark County including, but not limited to, licensing, labor, and health laws, and including NRS 338.010 through 338.180, as amended, if applicable.
2. The laws of the State of Nevada will govern as to the interpretation, validity, and effect of this bid, its award, and any contract entered into.

### 1.02 QUALITY ASSURANCE

A. For products or workmanship specified by association, trade, or federal standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents unless a date is specified in a technical section.

C. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

D. Contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

### 1.03 SCHEDULE OF REFERENCES

A. The following are definitions of abbreviations that occur, or may occur, elsewhere in these general requirements and technical requirements. Inclusion here of a reference to an industry standards group is for the purpose of the definition of the abbreviation. Inclusion in the work of this construction contract industry's standards group is referenced elsewhere in these general requirements and/or technical requirements.

| | |
|---|---|
| AA | Aluminum Association<br>818 Connecticut Avenue N. W.<br>Washington, DC 20006 |
| AABC | Associated Air Balance Council<br>1518 "K" Street N. W.<br>Washington, DC 20005 |
| AASHTO | American Association of State Highway and Transportation Officials<br>444 North Capitol Street N. W.<br>Washington, DC 20001 |
| ACI | American Concrete Institute<br>Box 19150<br>Redford Station<br>Detroit, MI 48219 |
| ADC | Air Diffusion Council<br>230 North Michigan Avenue<br>Chicago, IL 60601 |
| AGC | Associated General Contractors of America<br>1957 "E" Street N. W.<br>Washington, DC 20006 |
| AI | Asphalt Institute<br>Asphalt Institute Building<br>College Park, MD 20740 |
| AIA | American Institute of Architects<br>1735 New York Avenue N. W.<br>Washington, DC 20006 |
| AISC | American Institute of Steel Construction<br>400 North Michigan Avenue, Eighth Floor<br>Chicago, IL 60611 |
| AISI | American Iron and Steel Institute<br>1000 16th Street N. W.<br>Washington, DC 20036 |
| AITC | American Institute of Timber Construction<br>333 W. Hampden Avenue<br>Englewood, CO 80110 |
| AMA | Air Movement and Control Association<br>30 West University Drive<br>Arlington Heights, IL 60004 |
| ANSI | American National Standards Institute<br>1430 Broadway<br>New York, NY 10018 |
| APA | American Plywood Association<br>Box 11700<br>Tacoma, WA 98411 |
| ARI | Air-Conditioning and Refrigeration Institute |

1501 Wilson Boulevard
Arlington, VA 22209

| | |
|---|---|
| ASHRAE | American Society of Heating, Refrigeration and Air Conditioning Engineers<br>1791 Tullie Circle N. E.<br>Atlanta, GA 30329 |
| ASME | American Society of Mechanical Engineers<br>345 East 47th Street<br>New York, NY 10017 |
| ASPA | American Sod Producers Association<br>4415 West Harrison Street<br>Hillside, IL 60162 |
| ASTM | American Society for Testing and Materials.<br>1916 Race Street<br>Philadelphia, PA 19103 |
| AWI | Architectural Woodwork Institute<br>2310 South Walter Reed Drive<br>Arlington, VA 22206 |
| AWPA | American Wood-Preservers' Association<br>7735 Old Georgetown Road<br>Bethesda, MD 20014 |
| AWS | American Welding Society<br>550 LeJeune Road N. W.<br>Miami, FL 33135 |
| AWWA | American Water Works Association<br>6666 West Quincy Avenue<br>Denver, CO 80235 |
| BIA | Brick Institute of America<br>11490 Commerce Park Drive<br>Reston, VA 22091 |
| CDA | Copper Development Association<br>57th Floor, Chrysler Building<br>405 Lexington<br>New York, NY 10174 |
| CLFMI | Chain Link Fence Manufacturers Institute<br>1101 Connecticut Avenue N. W.<br>Washington, DC 20036 |
| CRSI | Concrete Reinforcing Steel Institute<br>933 Plum Grove Road<br>Schaumburg, IL 60195 |
| DHI | Door and Hardware Institute<br>7711 Old Springhouse Road<br>McLean, VA 22102 |
| EJCDC | Engineers' Joint Contract Documents Committee |

American Consulting Engineers Council
1015 15th Street N. W.
Washington, DC 20005

EJMA — Expansion Joint Manufacturers Association
25 North Broadway
Tarrytown, NY 10591

FGMA — Flat Glass Marketing Association
White Lakes Professional Building
3310 Harrison
Topeka, KS 66611

FM — Factory Mutual System
1151 Boston-providence Turnpike
P. O. Box 688
Norwood, MA 02062

FS — Federal Specification General Services Administration
Specifications and Consumer Information,
Distribution Section (WFSIS)
Washington Navy Yard, Bldg. 197
Washington, DC 20407

GA — Gypsum Association
1603 Orrington Avenue
Evanston, IL 60201

ICBO — International Conference of Building Officials
5360 S. Workman Mill Road
Whittier, CA 90601

IEEE — Institute of Electrical and Electronics Engineers
345 East 47th Street
New York, NY 10017

IMIAC — International Masonry Industry All-Weather Council - International Masonry Institute
815 15th Street N. W.
Washington, DC 20005

MBMA — Metal Building Manufacturer's Association
1230 Keith Building
Cleveland, OH 44115

MFMA — Maple Flooring Manufacturers Association
60 Revere Drive
Northbrook, IL 60062

MIL — Military Specification Naval Publications and Forms Center
5801 Tabor Avenue
Philadelphia, PA 19120

ML/SFA — Metal Lath/Steel Framing Association
221 North LaSalle Street
Chicago, IL 60601

NAAMM — National Association of Architectural Metal Manufacturers

| | |
|---|---|
| | 221 North LaSalle Street<br>Chicago, IL 60601 |
| NCMA | National Concrete Masonry Association<br>P. O. Box 781<br>Herndon, VA 22070 |
| NEBB | National Electrical Manufacturer's Association<br>2101 "L" Street N. W.<br>Washington, DC 20037 |
| NFPA | National Fire Protection Association<br>Battery March Park<br>Quincy, MA 02269 |
| NFPA | National Forest Products Association<br>1619 Massachusetts Avenue N. W.<br>Washington, DC 20036 |
| NSWMA | National Solid Wastes Management Association<br>1730 Rhode Island Ave. N. W.<br>Washington, DC 20036 |
| NTMA | National Terrazzo and Mosaic Association<br>3166 Des Plaines Avenue<br>Des Plaines, IL 60018 |
| NWMA | National Woodwork Manufacturers Association<br>205 W. Touhy Avenue<br>Park Ridge, IL 60068 |
| PCA | Portland Cement Association<br>5420 Old Orchard Road<br>Skokie, IL 60077 |
| PCI | Prestressed Concrete Institute<br>201 North Wells Street<br>Chicago, IL 60606 |
| PS | Product Standard US Department of Commerce<br>Washington, DC 20203 |
| RIS | Redwood Inspection Service<br>One Lombard Street<br>San Francisco, CA 94111 |
| RCSHSB | Red Cedar Shingle and Handsplit Shake Bureau<br>515 116th Avenue<br>Bellevue, WA 98004 |
| SDI | Steel Deck Institute<br>P. O. Box 9506<br>Canton, OH 44711 |
| SDI | Steel Door Institute<br>712 Lakewood Center North<br>14600 Detroit Avenue<br>Cleveland, OH 44107 |

| | |
|---|---|
| SIGMA | Sealed Insulating Glass Manufacturers Association<br>111 East Wacker Drive<br>Chicago, IL 60601 |
| SJI | Steel Joist Institute<br>1205 48th Avenue North, Suite A<br>Myrtle Beach, SC 29577 |
| SMACNA | Sheet Metal and Air Conditioning Contractors' National Association<br>8224 Old Court House Road<br>Vienna, VA 22180 |
| SSPC | Steel Structures Painting Council<br>4400 Fifth Avenue<br>Pittsburgh, PA 15213 |
| TCA | Tile Council of America, Inc.<br>Box 326<br>Princeton, NJ 08540 |
| UL | Underwriters' Laboratories, Inc.<br>333 Pfingston Road<br>Northbrook, IL 60062 |
| WCLIB | West Coast Lumber Inspection Bureau<br>6980 S. W. Varns Road, Box 23145<br>Portland, OR 97223 |
| WWPA | Western Wood Products Association<br>1500 Yeon Building<br>Portland, OR 97204 |

## 1.04 STATUTORY REQUIREMENTS FOR CONSTRUCTION CONTRACTS AND SUBCONTRACTS

A. All terms and conditions are governed by Southern Nevada Regional Housing Authority **Bid # B12138**

B. Each Contractor or subcontractor shall comply with laws and all applicable standards, orders, or regulations issued pursuant thereto; including but not limited to the following:
   1. The Copeland "Anti-Kickback" Act, as amended (18 USC 874) as supplemented in Department of Labor regulations (41 CFR Chapter 60).
   2. Nondiscrimination, Title VI of the Civil Rights Act of 1964 (PL 88-352), as amended, (42 USC 2000d) and the requirements imposed by the regulations of the Department of Commerce (15 CFR Part 8) issued pursuant to that title.
   3. The Flood Disaster Protection Act of 1973 (PL 93-234), as amended.
   4. Architectural Barriers Act (PL 90-480), 42 USC 4151, as amended.
   5. Rehabilitation Act of 1973, 29 USC 794, Executive Order 11914.
   6. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (PL 91-646, as amended) 15 CRF Part 916.
   7. The National Environmental Policy Act of 1979 (PL 90-1890); the National Historic Preservation Act of 1966 (80 Stat 915, 16 USC 470); and Executive Order No. 11593 of May 31, 1971.
   8. Equal Employment Opportunity, Executive Order 11246, as amended by Executive Order 11375, and as supplemented in Department of Labor regulations (41 CFR Chapter 60).
   9. Certification of Nonsegregated Facilities as Required by the May 9, 1967, Order (32 FR 7439, May 19, 1967) on Elimination of Segregated Facilities, by the Secretary of Labor.

10. The Clean Air Act, as amended, 42 USC 1857 et seq., the Federal Water Pollution Control Act, as amended, 33 USC 1251 et seq., and the regulations of the Environmental Protection Agency with respect thereto, at 40 CFR Part 15, as amended from time to time.
11. The Power Plant and Industrial Fuel Use Act of 1978 (92 Stat. 3318. PL 95-620) relating to the conservation of petroleum and natural gas.

**PART 2 PRODUCTS**

Not Used.

**PART 3 EXECUTION**

Not Used.

**END OF SECTION**

**SECTION 01 42 10**

**PERMITS AND COMPLIANCE**

## PART 1 - GENERAL

### 1.01 PERMITS AND LICENSES

A. The Contractor shall make the necessary arrangement for, and obtain all permits and licenses required for the Work, including paying the costs and expenses thereof.

B. The Contractor shall be responsible for the payment of fees which are assessed by any City, County, State or Federal agency having jurisdiction over the Work, unless otherwise stipulated in the Contract Documents.

### 1.02 COMPLIANCE

A. The Contractor shall give all notices, pay all fees and comply with all laws, rules and regulations applicable to the Work.

### 1.03 ADDITIONAL COMPLIANCE

A. The Contractor, Subcontractors, and the employees of the Contractor and Subcontractors, shall comply with all regulations governing conduct, access to the premises, operation of equipment and systems, and conduct while in or near the premises and shall perform the Work in such a manner as not to unreasonably interrupt or interfere with the conduct of normal school functions.

### 1.04 SAFETY

A. The Contractor shall take every precaution against injuries to SNRHA personnel, residents, and the general public, in the performance of the Work. Refer to General Conditions.

B. The Contractor shall comply with all applicable OSHA regulations.

C. The Contractor shall comply with the provisions of the SNRHA Safety Manual, available from SNRHA Safety Compliance Officer.

### 1.05 NOISE CONTROL

A. The Contractor is hereby advised that the Work of this Contract shall be performed in compliance with all applicable provisions of Local Laws.

B. Without restricting the generality of the foregoing, the Contractor's attention is directed to the following specific provision of this Code which is applicable to construction and related work in and around development. Comply to the noise exposure guidelines of the EPA.

**END OF SECTION**

**SECTION 01 51 00**

**CONSTRUCTION FACILITY AND TEMPORARY CONTROLS**

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Temporary Utilities: Electricity, telephone service, water, and sanitary facilities.

B. Temporary Controls: Barriers, enclosures, and fencing, protection of the work and water control.

C. Construction Facilities: Access roads, parking, progress cleaning, project signage, and temporary buildings.

### 1.02 TEMPORARY ELECTRICITY

A. Cost: By Contractor, provide and pay for power service required from utility source to field office.

B. Provide power outlets for construction operations. Provide flexible power cords as required.

C. Provide main service disconnect and over current protection at convenient location.

D. Provide adequate distribution equipment, wiring, and outlets to provide single-phase branch circuits for power and lighting to accomplish the work.

### 1.03 TELEPHONE SERVICE

A. Provide, maintain, and pay for telephone service to field office at time of project mobilization.

### 1.04 TEMPORARY WATER SERVICE

A. Cost: by Contractor, provide, maintain and pay for water service required

### 1.05 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures.

### 1.06 BARRIERS

A. Provide barricades required by governing authorities for public right-of-way.

B. Provide protection for plant life designated to remain.

C. Protect non-owned vehicular traffic, stored materials, site and structures from damage.

D. If necessary, provide and maintain temporary chain link fence 6'-0" high minimum to prevent unauthorized entry to construction areas to allow for Owner's use or site, and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

### 1.07 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.

C. Prohibit traffic from landscaped areas.

D. Prevent erosion and sedimentation. Provide water barriers as required to protect site from soil erosion. Provide temporary measures such as berms, dikes, and drains to prevent water flow. Apply corrective measures as required for any erosion or sedimentation.

E. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.

**1.03 PROGRESS CLEANING AND WASTE REMOVAL**

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.

**1.04 FIELD OFFICES – N/A**

**1.05 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

A. Remove temporary utilities, equipment, facilities, and materials prior to Final Application for Payment inspection.

B. Clean and repair damage caused by installation or use of temporary work or access/storage areas.

**END OF SECTION**

**SECTION 01 60 00**

**MATERIAL AND EQUIPMENT**

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Products
B. Transportation and handling
C. Storage and protection
D. Product options
E. Substitutions

### 1.02 PRODUCTS

A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

B. Provide interchangeable components of the same manufacture, for components being replaced.

### 1.03 TRANSPORTATION AND HANDLING

A. Transport and handle Products in accordance with manufacturer's instructions.

B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.

C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

### 1.04 STORAGE AND PROTECTION

A. Store and protect Products in accordance with manufacturers' instructions with seals and labels intact and legible.

B. Store sensitive Products in weather tight, climate controlled enclosures.

C. For exterior storage of fabricated Products, place on sloped supports, above ground.

D. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.

E. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation or potential degradation of Product.

F. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.

G. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

H. Arrange storage of Products to permit access for inspection. Periodically inspect to verify

Products are undamaged and are maintained in acceptable condition.

## 1.05 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.

C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

## 1.06 SUBSTITUTIONS

A. SNRHA/Architect/Engineer will consider requests for Substitutions only within 15 days after date of Owner-Contractor Agreement.

B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

D. A request constitutes a representation that the Bidder or Contractor:

1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
2. Will provide the same warranty for the Substitution as for the specified Product.
3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to owner.
4. Waives claims for additional costs or time extension which may subsequently become apparent.
5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities.

E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

F. Substitution Submittal Procedure:

1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.

2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.

3. The SNRHA/Architect/Engineer will notify Contractor in writing of decision to accept or reject request.

**END OF SECTION**

## SECTION 01 71 33

## PROTECTION OF ADJACENT CONSTRUCTION

### PART 1 GENERAL

### 1.01 SUMMARY

A. Protect existing utilities and improvements not designated for removal.

B. Restore damaged or temporarily relocated utilities and improvements to condition equal to or better than condition prior to such damage or temporary relocation in accordance with Contract Documents.

C. Verify exact locations and depths of utilities shown and make exploratory excavations of utilities that may interfere with Work.
   1. Perform exploratory excavations as soon as practicable after award of Contract and in sufficient time in advance of construction to avoid possible delays to Contractor's Work.
   2. When exploratory excavations show utility location as shown to be in error, notify Owner.

D. Number of exploratory excavations shall be sufficient to determine alignment and grade of existing utilities.

### 1.02 REFERENCES

A. Standard Specifications: *Uniform Standard Specifications for Public Works' Construction, Off-Site Improvements, Clark County Area, Nevada,* most recent edition.
   1. Comply with referenced sections and subsections of Standard Specifications.
   2. Contractual, measurement, and payment provisions of Standard Specifications do not apply.

### PART 2 PRODUCTS

Not Used.

### PART 3 EXECUTION

### 3.01 CONSTRUCTION INTERFERENCES

A. Contractor's responsibilities regarding existing utilities and construction interferences shall be in accordance with Subsection 105.06 of the Standard Specifications, with the following additional provisions.

B. Construction interferences include:
   1. Utility or service connections within limits of excavation or over-excavation required for Work under Contract.
   2. Utility or service connections located in space required by Work under Contract.
   3. Utility or service connections required to be disturbed or removed to permit construction as specified under Contract.
      a. Disturb or remove only with approval of Owner and following notification to owner of interfering utility or service connection.
      b. Promptly reconstruct removed or disturbed utility or service connections in original or other authorized location in condition at least as good as prior to such removal or disturbance, subject to inspection of owner of same.

C. Contractor's responsibility to remove or replace shall apply even in event damage or destruction occurs after backfilling. Notify owner of utility or service connection immediately after damage or destruction occurs or is discovered.

D. During performance of Work, owner of utility affected by Work shall have right to enter when necessary upon any portion of Work for purpose of maintaining service and of making changes in or repairs to said utility.

E. Contractor shall not be held responsible for failure to complete Work on time to extent that such delay was caused by failure of owner or of agency having jurisdiction over utility or service connection to authorize or otherwise provide for its removal, relocation, protection, support, repair, maintenance, or replacement.

F. Exercise extreme care so as not to damage existing utilities and/or new and existing facilities that do not physically constitute construction interference.
   1. Use equipment of such weights throughout construction operations that existing buried utilities and/or new and existing facilities are not damaged by excessive loadings thereon.
   2. Be responsible for costs of repair and/or replacement of new or existing facilities damaged by operations, as determined by Owner.

G. Prior to trenching, contact "CALL BEFORE YOU DIG" 1-800-227-2600 to determine location of existing utilities.
   1. Repairs to be made shall include appropriate warranties for that portion of utility deemed damaged.
   2. Costs for repair of damaged utilities: Responsibility of Contractor.

H. Contractor acknowledges that utility companies may not be members of USA System and, therefore, not automatically contacted by referenced telephone number.
   1. Be aware of utility company facilities not reported by USA System, and bear damages stemming from repair or delay costs or other expenses resulting from unanticipated discovery of underground utilities.
   2. Notify the following utilities at least two working days in advance of commencement of Work at site to examine construction site and mark location of utilities' respective facilities. Verify that each utility has responsibly responded to notification.
      a. NV ENERGY - Engineering Dept., phone 367-5232.
      b. SOUTHWEST GAS CORPORATION - Line Locator Dispatcher, phone 365-2269.
      c. EMBARQ - Cable Locator, phone 385-3651.
      d. AT&T COMMUNICATIONS - Supervisor of Operations, phone 736-6676.
      e. SOUTHERN NEVADA WATER SYSTEM - Location Supt., phone 565-9763.
      f. CITY OF LAS VEGAS - Electrical Dept., phone 386-6333; Traffic Engineering Dept., phone 386-6327; Sanitation Division, phone 457-1233.
      g. COX COMMUNICATIONS (CABLE TV) - phone 385-3339.
      h. LAS VEGAS VALLEY WATER DISTRICT - Engineering Dept., phone 258-3118.
      i. CITY OF HENDERSON – Water and Sewer Service, Customer Care Center phone (702) 267-5900.
      j. KERN RIVER GAS TRANSMISSION COMPANY - phone 399-1612.

   3. If above telephone numbers are changed, Contractor is not relieved of responsibility for notifying various utilities.

**3.02 OVERHEAD POWER LINE SAFETY LAW**

A. Overhead Power Line Safety Law: The Nevada Legislature enacted NRS 455.200 to 455.250 requiring utilities be notified and give consent before Work is performed near overhead power lines.

B. Call NV Energy at 593-6111 prior to working with hand tools or operating equipment near overhead power lines.

C. If necessary, additional conditions may be required by NV Energy before consent to do the Work is given; these could include:
   1. Reasonable limits on the time, place, and manner of the Work.
   2. Placing barriers to prevent contact with the lines.
   3. Temporarily disconnecting the power to the lines.

D. Work to be done by NV Energy as a result of these conditions shall be started within 5 working days of:
   1. Receiving notice of Work planned near an overhead line, or
   2. Executing an agreement on payment for preventative work needed to meet these conditions.

E. Penalties of up to $1,000 per day could be imposed for violation of this law. Contact Scott Paris at 227-2671 with questions regarding this law.

F. Contractor performing the Work in the vicinity of the overhead line carrying high voltage shall pay actual expenses incurred by the public utility in carrying out the preventative measures required.

**3.03 PROTECTION OF STREET OR ROADWAY MARKERS**

A. Do not destroy, remove, or otherwise disturb existing survey markers or other existing street or roadway markers without proper authorization.

B. Do not start pavement breaking or excavation until survey or other permanent marker points that will be disturbed by construction operations have been properly referenced for easy and accurate restoration.

C. Survey markers or points disturbed by Contractor without proper authorization shall be accurately restored at Contractor's expense after street or roadway resurfacing has been completed.

**3.04 RESTORATION OF PAVEMENT**

A. Replace paved areas, including asphaltic concrete berms cut or damaged during construction, with similar materials and of equal thickness to match existing adjacent undisturbed areas, except where specific resurfacing requirements have been called for in Contract Documents or in requirements of agency issuing permit.

B. Temporary and permanent pavement shall conform to requirements of owner of affected pavement.

C. Neatly saw cut in straight lines pavements which are subject to partial removal.

D. Comply with Subsection 208.03.05 of the Standard Specifications.

**END OF SECTION**

## SECTION 01 73 29

## CUTTING AND PATCHING

### PART 1 GENERAL

### 1.01 SECTIONS INCLUDES

A. Cutting, fitting, and patching required to complete the Work or to make its parts fit together properly.

### 1.02 SUBMITTALS

A. Submit written request in advance of cutting or alteration which affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   4. Visual qualities of sight exposed elements.
   5. Work of Owner or separate contractor.

B. Include in request:
   1. Identification of Project.
   2. Location and description of affected Work.
   3. Necessity for cutting or alteration.
   4. Description of proposed Work and Products to be used.
   5. Alternatives to cutting and patching.
   6. Effect on work of Owner or separate contractor.
   7. Written permission of affected separate contractor.
   8. Date and time Work will be executed.

### 1.03 REQUIREMENTS AND LIMITATIONS

A. Do not damage or endanger a portion of the Work or fully or partially completed construction of Owner or separate contractors by cutting, patching, excavation, or otherwise altering such construction.

B. Do not cut or otherwise alter such construction by Owner or a separate contractor except with written consent of Owner and of such separate contractor.
   1. Such consent will not be unreasonably withheld.
   2. Do not unreasonably withhold from Owner or a separate contractor, Contractor's consent to cutting or otherwise altering the Work.

### PART 2 PRODUCTS

### 2.01 MATERIALS

A. Primary Products: Those required for original installation.

## PART 3 EXECUTION

### 3.01 EXAMINATION

A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing Work, assess conditions affecting performance of Work.

C. Beginning of cutting or patching means acceptance of existing conditions.

### 3.02 PREPARATION

A. Provide protection from elements for areas that may be exposed by uncovering Work.

B. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project.

C. Maintain excavations free of water.

### 3.03 CUTTING

A. Execute cutting and fitting including excavation and fill to complete the Work.

B. Uncover Work to install improperly sequenced Work.

C. Remove and replace defective or non-conforming Work.

D. Remove samples of installed Work for testing when requested.

E. Provide openings in the Work for penetration of mechanical and electrical Work.

F. Employ original installer to perform cutting for weather exposed and moisture resistant elements and sight-exposed surfaces.

G. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

### 3.04 PATCHING

A. Execute patching to complement adjacent Work.

B. Fit Products together to integrate with other Work.

C. Execute Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

D. Employ original installer to perform patching for weather exposed and moisture resistant elements and sight exposed surfaces.

E. Restore Work with new Products in accordance with requirements of Contract Documents.

F. Fit Work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

G. At penetrations of walls, partitions, ceiling, or floor construction completely seal voids with fire-rated material to full thickness of penetrated element.

H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

**END OF SECTION**

**SECTION 01 77 00**

**CONTRACT CLOSE-OUT**

## PART 1 - GENERAL

### 1.01 SECTION INCLUDES

A. Close-out procedures.

B. Final cleaning.

C. Project record documents.

D. Warranties – See Section 01 78 36 Warranties and Bonds.

### 1.02 RELATED SECTIONS

A. Section 01 78 36 – Warranties and Bonds.

B. Section 01 32 33 – Construction Photographs.

### 1.03 CLOSE-OUT PROCEDURES

A. Submit written certification that Contract Documents have been reviewed, work has been inspected and that work is complete in accordance with Contract Documents and ready for Owner's review.

B. Provide submittals to SNRHA that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

### 1.03 FINAL CLEANING

A. Execute final cleaning prior to final project assessment.

B. Clean site: sweep paved areas, rake clean landscaped surfaces.

C. Remove waste and surplus materials, rubbish, and construction facilities from site.

### 1.04 PROJECT RECORD DOCUMENTS

A. Maintain on site, one set of the following record documents; record actual revisions to the work:

1. Drawings
2. Specifications
3. Addenda
4. Change Orders and other modifications to the Contract.
5. Permits and Licensing

B. Store record documents separate from documents used for construction.

C. Record information concurrent with construction progress.

D. Record Documents and Shop Drawings: Legibly mark each item to record actual construction including:

1. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.

2. Field changes of dimension and detail.

3. Details not on original Contract drawings.

4. Accurately record actual locations of capped utilities, subsurface obstructions, etc.

E. Construction photographs.

F. Submit documents to SNRHA with claim for final Application for Payment.

G. Final payment application (10% retention) can not be released until the punch-list has been completed and all close-out documents have been received and approved by the Housing Authority.

**FINAL PAYMENT DOCUMENTATION**

(Per CIAP 7485.1 Section 9-30)

| | |
|---|---|
| **Project #** | **Purchase Order #** |
| **CFP/SNRHA RESERVE #** | **Contract #C** |
| **Project Name** | **Pre-Construction Meeting** |
| **Contractor** | **Construction Completion Date** |
| **NTP Date** | **IFB #** |
| **Contract Amount** | |

**C H E C K L I S T**

| ITEM # | FORM REFERENCE | ITEM DESCRIPTION | DATE REC'D. |
|---|---|---|---|
| 1 | Contractors Letterhead | Any time extensions applied for **(See Change Orders)** | |
| 2 | Daily Construction rpt. | Sign-off of Final Punch List (incl. As-Built Dwgs./Reviewed by City) | |
| | | Set of As-Built Drawings and Specs | |
| | | Set of City-Reviewed Drawings and Specs | |
| 3 | LiabRel.con | Release of Liability | |
| 4 | CertComp.pre[A] | Certificate of Completion | |
| 5 | Cert&Rel.con | Certification and Release | |
| 6 | Contractor's Letterhead | Approved Construction Progress Schedule | |
| 7 | CChgOrd.frm | Any Executed Change Orders | |
| 8 | Contractor's Letterhead | Any warranties or guarantees of items called for | |
| 9 | Contractor's Transmittal | Any signed receipts for material turned over to SNRHA | |
| 10 | Building Department | Certificate of Occupancy (when appropriate) | |
| 11 | HUD51001/HUD51002 | "Final" Periodical Estimate for Partial Payment | |
| 12 | Mechanic.Wav | Subcontractor/Supplier Final Waiver of Mechanics Lien | |
| 13 | SIIS.frm | "Final Certificate" OF Insurance on GC or Subs | |
| 14 | Bond.frm | Request for Final Clearance for Claims & Outstanding Balance of Bond | |
| 15 | HUD-60002 | Section 3 Summary Report | |
| 16 | Section 3 | Certification of Compliance by Section 3 Coordinator | SNRHA |
| 17 | ARRA | Jobs created or retained | N/A |
| 18 | Quality Assurance | Contractor Evaluation | SNRHA |
| 19 | Certified Payroll form | Hours, Manpower and Schedule | |
| 20 | SNRHA | Letter to HUD about Final | SNRHA |

[A] Any contract exceeding $50,000 needs prior HUD approval before processing final payment (see section 9-31 for items needed in submission). Contracts of $2,000 and subject to Davis Bacon need to submit the "Certificate of Completion" to the Labor Relations staff at HUD

**END OF SECTION**

**SECTION 01 78 36**

**WARRANTIES AND BONDS**

## PART 1 - GENERAL

### 1.01 RELATED SECTIONS

A. Invitation to Bid: Instruction to Bidders: Bid Bonds.

B. General Conditions: Performance Bond and labor and material payment bonds, warranty, and corrections of work.

C. Section 01 77 00 – Contract Close-Out.

D. Individual Specification Sections: Warranties, and Operations and Maintenance data, required for specific products or work.

### 1.02 FORM OF SUBMITTALS

A. Bind in commercial quality 8 ½" x 11 inch, three 'D' size ring binders with durable covers.

B. Cover: Identify each binder with typed or printed titles WARRANTIES AND BONDS, with title of project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

C. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

D. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

E. Separate Operations and Maintenance data for each product or work item with index tab sheets keyed to the Table of Contents listing.

### 1.03 PREPARATION OF SUBMITTALS

A. Obtain warranties and bonds, executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within ten (10) days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Completion is determined.

B. Verify that documents are in proper form and contain full information.

C. Co-execute submittals when required.

D. Retain warranties and bonds until specified for submittal.

**1.04 TIME OF SUBMITTALS**

A. For equipment or component parts of equipment put into service during construction with owner's permission, submit documents within ten (10) days after acceptance.

B. Make other submittals with ten (10) days after date of Substantial Completion, prior to final Application for Payment.

For items of work for which acceptance is delayed beyond date of Substantial Completion, submit within ten (10) days after acceptance, listing the date of acceptance as the beginning of the warranty period.

**END OF SECTION**

# PROJECT MANUAL

FOR

# JONES GARDENS
# WHEELCHAIR ACCESSIBILITY UPGRADE

## LOCATED AT

1750 Marion Drive
Las Vegas, Nevada 89115

## OWNER

Southern Nevada Regional Housing Authority (SNRHA)
340 North 11th Street
Las Vegas, Nevada 89119
Telephone: (702) 922-6071

## ARCHITECT

Pugsley Simpson Coulter Architects
2480 E. Tompkins Avenue, Suite 222
Las Vegas, Nevada 89121
Telephone: (702) 435-1150
Fax: (702) 435-7699

## DATE

February 22, 2012

**Bid Set**

**00 01 10**
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**DIVISION 22 – PLUMBING**



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**DIVISION 24 – NOT USED**

**DIVISION 25 – NOT USED**

**DIVISION 26 – ELECTRICAL**



**DIVISION 27 – NOT USED**

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**DIVISION 32 – EXTERIOR IMPROVEMENTS**

**DIVISION 33 – NOT USED**

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SECTION 02 41 00

DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Site and building demolition. Protection of existing and removal of indicated items, including, but not limited to:
   1. Construction and removal of temporary partitions, fencing, and protections.
   2. Identification of utilities.
   3. Capping, removal, relocation, and/or abandonment of designated utilities.
   4. Pay for the legal and environmentally safe off-site disposal or recycling of demolition debris.
   5. Removal of asphalt and concrete paving.
   6. Removal of concrete curb work.
   7. Removal of buildings and associated appurtenances. Fill in voids left by building demolition.
   8. Removal of natural and man made landscape materials, including trees.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

1.3 HAZARDOUS MATERIALS:

A. Before authorizing start of work, the Contractor shall have notified the Owner's Hazardous Materials Inspectors clearance stating that Hazardous Materials work is beginning. Asbestos removal is included in this contract.

B. In the areas of work where lead-based paint is present, the Contractor is responsible for adhering to the OSHA Construction Standard for Lead (29 CFR 1926.62). It requires an initial determination concerning whether any employee may be exposed to lead at or above the action level.

C. The Owner has established a hazardous materials abatement program. Should any other hazardous materials be encountered during the course of demolition, immediately notify the Owner and follow project requirements

1.4 QUALITY ASSURANCE

A. Regulatory Requirements, Codes, and Standards:
   1. Conform to applicable federal, state, and local codes for demolition work, health and safety requirements, dust control, and debris removal.
   2. Obtain required permits from authorities including but not limited to dust control permit, demolition permit, and storm water permit.
   3. ANSI A10.6 - Safety Requirements for Demolition.
   4. Requirements of affected utility companies.
   5. Conform to applicable codes for procedures when hazardous or contaminated materials are discovered.

B. Structural Integrity: At all times maintain structural integrity of all items designated to remain.

1.5 SUBMITTALS

A. Schedule: Per provisions of Section 01 33 00, submit sequence of demolition operations to Owner for review prior to start of work to prevent interruption of on-site business operations of buildings designated to remain.
   1. Coordinate shutoff, capping, continuation, abandonment, and/or new construction of utility services as required, together with details for dust and noise control protection.

B. Shop Drawings per provisions of 01 34 00:
   1. Indicate demolition and removal sequence.
   2. Indicate location and construction of temporary work, barricades and fences.

C. Design Data: Submit calculations for bracing, shoring, and underpinning signed and sealed by a Professional Engineer in the State of Nevada.

D. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.6 CLOSEOUT SUBMITTALS

A. Submit under the provisions of section 01 77 00 – Execution and Close-Out Requirements.

B. Project Record Documentation: Accurately record and submit actual locations of capped utilities, subsurface obstructions, and related details.

C. Digital Submittal: Submit one (1) CD containing a digital copy of all close out submittals submitted in hard copy format.

1.7 PROJECT CONDITIONS

A. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.

B. Notify Architect and Owner upon discovery of hazardous materials.

C. Protections: Provide temporary barriers to protect Owner's personnel, the residents, and the public from injury from demolition work.
   1. Provide shoring, bracing, or support to prevent movement, settlement, or collapse of structure or element to be demolished and adjacent facilities.
   2. It is the Contractor's responsibility to furnish, install, and maintain throughout the demolition and utility relocation a substantial temporary fence around the site in order to ensure public safety and protect the site.
      a. A substantial temporary fence is at a minimum, an 8-foot T-post fence with 6-foot chain link fabric and posts buried at least 18 inches, or an Owner-approved equivalent fence. The fence shall include a minimum of two locked gates, each with a minimum 20-foot width.
      b. Maintain existing sidewalks to greatest extent possible.
      c. If damaged during demolition work, the Contractor shall repair the fence.
   3. At the completion of demolition work, the substantial temporary fence shall be left in place for future school construction.

D. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no expense to the Owner.

E. Traffic: Conduct operations and debris removal to ensure minimum interference with roads, streets, parking, walks, and other adjacent areas occupied or used facilities.

1. Do not close, block, or otherwise obstruct streets, walks or parking facilities, of occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around obstructed traffic ways.

F. Explosives: Explosives are not permitted at the site.

G. Flame Cutting: do not use cutting torches for removal until flammable materials are removed. At concealed spaces, verify conditions prior to flame cutting operations. Maintain portable fire suppression devices during flame cutting operations.

H. Utility Services: Maintain utilities to off-site buildings designated to remain and protect against damage during demolition operations. Do not interrupt utilities serving buildings to remain, except when such utilities have been relocated and when authorized in writing by authorities having jurisdiction. All utilities to be relocated or removed by others should be notified at least 48 hours before demolition begins.

1. Cable television lines to be removed or relocated by Cox Communication personnel.
2. Electric conduits, vaults, meters and associated appurtenances to be removed or relocated by Nevada Energy personnel.
3. Natural gas conduits, meters, valves and associated appurtenances to be removed or relocated by Southwest Gas personnel.
4. Telephone lines to be relocated, trimmed and/or removed by Century Link communications personnel.
5. Septic tanks and sanitary sewer laterals removed shall be in accordance with the 1997 Southern Nevada Design and Construction Standards for Wastewater Collection systems Section 3.14 and other applicable sections.
6. Domestic waterlines, irrigation lines, fire hydrants and fire lines to be removed, abandoned and/or capped shall be in accordance with the current Clark County Fire Department specifications and the 1995 Clark County Uniform Design and Construction Standards for Water Distribution Systems Sections 2.14, 2.15 and other applicable sections.
7. Wells and pumps to be plugged and removed in a manner that meets Clark County, Nevada Administrative Code (NAC), and Nevada Department of Conservation and Natural Resources, Division of Water Resources.

I. Fire Protection: Maintain fire protection services during demolition operations. Coordinate work to ensure fire sprinklers, fire alarms, smoke detectors, emergency lighting, exit signs and other life safety systems remain in full operation in occupied areas. Provide Fire Watch services as required by the project specifications.

J. Environmental Controls:

1. The Contractor shall furnish all labor, equipment, and means required and shall carry out effective measures wherever and as often as necessary to prevent its operations from causing visible dust emissions from leaving the work areas. These measures shall include, but are not limited to, providing additional watering equipment, reducing vehicle speed on haul roads, restricting traffic on haul roads, and covering haul vehicles. The Contractor shall be responsible for any damage resulting from any dust originating from operations. The dust abatement measures shall be continued for the duration of the contract.

2. The Contractor shall hose down any vehicle or equipment leaving the project area with water prior to entering the public right-of-way if the vehicles appear to be transporting excessive amounts of dust. When any material or debris is tracked out from the project area, the Contractor shall clean all paved public roads near the site entrances as often as required to prevent spreading of dust by vehicles.

3. The Contractor shall comply with the regulations issued by the Clark County Department of Air Quality Management including, but not limited to the following:
    a. Dust palliative application is required in bare soil areas that are left unattended for more than 30 days. Upon completion of the demolition work, the site may lay unattended for up to 10 weeks and portions of the site contain bare soil. Therefore, at the completion of demolition work, a dust palliative shall be applied to bare soil areas without Type II gravel. The Contractor shall be responsible for application of dust palliative as specified in the regulations.
4. Comply with governing regulations pertaining to environmental protection.
5. Do not use water when it may create hazardous or objectionable conditions.
6. Upon completion of demolition, provide appropriate erosion control.

K. Contractor is responsible for conforming to the demolition phasing plans as shown on Drawings. Any conflicts that require deviation from the approved phasing must be submitted and approved by the Owner and Architect.

L. It is the Contractor's responsibility to coordinate and perform all demolition work in areas to accommodate new construction. Areas are to be cleaned and properly prepped to receive new work.

M. Items indicated on the Drawings to be removed and reinstalled shall be carefully removed and temporarily stored in a climatized, weatherproof area as determined by the Owner. Any items that are damaged during the removal process shall be replaced or repaired to existing condition at no expense to the Owner. If items indicated to be removed and reinstalled are deemed unable to be removed without damage, inform the Owner and Architect for an approved direction.

N. Access to/from the garden area, playgrounds, portables, and parking are to be maintained throughout demolition.

O. If unforeseen conditions are discovered during demolition, report to Owner and Architect immediately for an approved scope of work.

P. The Contractor is responsible for repairing or replacing any damage that exceeds the demolition scope indicated on the Drawings, at no additional cost to the Owner.

## PART 2 PRODUCTS

As noted in applicable Sections.

## PART 3 EXECUTION

### 3.1 EXISTING BUILDING DOCUMENTATION

A. Document condition of adjacent site items, structure, and buildings that are to remain.

B. Make arrangements with building owners and occupants to survey interior and exterior of existing buildings.

C. Employ land surveyor to provide following documentation:
1. Survey building exterior for position and elevation of principal elements before and after completion of demolition.

D. Provide following graphic documentation:
   1. Photographically document existing building exterior before beginning demolition and after completing demolition.
   2. Identify photographs with date, time, orientation, and project identification.
   3. Deliver photographs to Owner with project record documents.

3.2 EXAMINATION

A. Examine existing buildings indicated to be demolished before demolition.

B. Determine where removals may result in structural deficiency or unplanned building collapse during demolition. Coordinate demolition sequence and procedures to prevent structures from becoming unstable.

C. Determine where demolition may affect structural integrity or weather resistance of adjacent buildings indicated to remain.
   1. Identify measures required to protect buildings from damage.
   2. Identify remedial work including patching, repairing, bracing, and other work required to leave buildings indicated to remain in structurally sound and weathertight and watertight condition.

D. If applicable, verify hazardous material abatement is complete before beginning demolition.

3.3 PREPARATION

A. Where applicable, provide shoring, bracing, or support to prevent movement, settlement, or collapse.

B. Locate, identify, stub off, and disconnect utility services indicated to be removed. Provide continuous service during business hours to buildings designed to remain.

C. Protect existing landscape materials, trees, appurtenances, and structures indicated to remain.

D. Erect and maintain temporary barriers and security devices for protection of the public and existing items indicated to remain.

E. Notify affected utility companies before starting work and comply with utility's requirements.

3.4 DEMOLITION REQUIREMENTS

A. Conduct demolition to minimize interference with adjacent structures, off-site buildings, utilities, and parking lot designated to remain.

B. Provide services for effective air and water pollution controls required by local authorities having jurisdiction.

C. Conduct demolition with minimum interference to public or private access to occupied adjacent structures. Maintain egress and access at all times during school operating hours. Conform to phasing plans as indicated on Drawings.

3.5 DEMOLITION

A. Perform demolition activities in a systematic manner.

B. Demolish and remove foundation walls including footings. Break up and remove below grade concrete slabs and/or any associated structural elements for items shown to be removed on Drawings.

C. Demolish and remove all items indicated on Drawings.

D. If unanticipated mechanical, electrical, or structural elements conflicting with intended function or new construction is encountered, investigate and measure both the nature and extent of the conflict. Submit report to Owner in accurate written detail. Pending receipt of directive from Owner's Representative, rearrange demolition schedule as necessary to continue overall job progress without undue delay.

E. Below Grade: Completely fill below grade areas and voids resulting from demolition work. Provide fill consisting of approved earth, gravel, or sand, free of trash and debris, stones over 3 inches in diameter, roots, or other organic matter.

F. Remove and dispose of natural and manmade landscape materials in landscaped areas designated to be demolished.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris, rubbish, and other materials from the site resulting from demolition operations. Transport and legally dispose off-site.

B. Burning of removed materials is not permitted on project site.

C. Where possible, make use of recycling services and centers for demolished materials.

3.7 CLEANING AND REPAIR

A. Upon completion of work, remove tools, equipment, and demolished materials from site.

B. Repair demolition that is performed in excess of what is required, at no expense to Owner. Return surfaces designed to remain to their original existing condition. Repair adjacent walls, construction, surfaces or substantial temporary fence soiled or damaged by demolition work.

C. Do not allow rubbish and debris to accumulate. On a daily basis clean and sweep roads, streets, drives, sidewalk, adjoining properties and areas affected by demolition operation.

D. Remove all temporary protections and barriers, except for the substantial temporary fence described in this section.

E. At the completion of demolition work, the substantial temporary fence shall be left in place for future school construction.

F. Upon completion of demolition, clean and prep all surfaces to be able to receive new work as shown on Drawings.

G. Upon completion of demolition, provide appropriate erosion control as noted in drawings.

END OF SECTION

SECTION 02 41 13

SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal of materials and equipment, including, but not limited to:
1. Indicated portions of concrete sidewalks and slabs.
2. Indicated portions of asphalt paving.
3. Identification of utilities.
4. Capping and removal of indicated utilities.
5. Legal and environmentally safe off site disposal or recycling of construction debris.

1.2 RELATED SECTIONS

A. Section 01 11 00 - Summary of Work.

B. Division 23 - HVAC.

C. Division 26 - Electrical.

D. Section 31 23 23 - Fill

E. Hazardous Materials: The Owner has established a hazardous materials abatement program. Should hazardous materials be encountered during the course of demolition, immediately notify the Owner and comply with project hazardous materials requirements.

1.3 QUALITY ASSURANCE

A. Regulatory Requirements:
1. Comply with applicable federal, state, and local codes for demolition work, safety of structure, dust control, and debris removal.
2. Obtain required permits from authorities.
3. ANSI A10.6 Safety Requirements for Demolition.
4. Requirements of affected utility companies.

1.4 SUBMITTALS

A. Schedule: Per provisions of Section 01 33 00 submit sequence of demolition operations to Construction Manager for review prior to start of work to prevent interruption of residential activities.
1. Coordinate shutoff, capping, and continuation of utility services required; provide details for dust and noise control protection.
2. Coordinate with Construction Manager for continuing access to the existing buildings.

B. Shop Drawings: Indicate location and construction of temporary work.

C. Concrete Cutting: Submit 3 copies of proposed cutting procedures and operations for each type of concrete demolition for review and approval prior to starting the work. Outline types of equipment proposed, protections to be installed, and cutting schedule.

D. Project Record Documentation: Accurately record and submit actual locations of capped utilities, subsurface obstructions, and related details.

E. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.5 PROJECT CONDITION

A. Condition of Structures: The Southern Nevada Regional Housing Authority assumes no responsibility for actual condition of items to be demolished.

B. Protections: Provide temporary barriers to protect the staff, residents, and the public from injury.
Take protective measures to provide free and safe passage to occupied buildings.
1. Provide temporary fencing around those portions of the existing buildings where work is occurring.
2. Protect existing work which becomes exposed during demolition operations
3. Remove protections at completion of work.

C. Damages: Immediately repair damages caused to adjacent facilities by demolition work.

D. Traffic: Conduct operations and debris removal to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
1. Do not close, block, or otherwise obstruct streets, walks, or occupied or used facilities without written permission from authorities having jurisdiction. Provide alternate routes around obstructed traffic ways.

E. Explosives: Explosives are not permitted at the site.

F. Flame Cutting: Do not use cutting torches for removal until flammable materials re removed. At concealed spaces, verify conditions prior to flame cutting operations. Maintain portable fire suppression devices during flame cutting operations.

G. Utility Services: Maintain existing utilities and protect against damage during demolition operations.
1. Do not interrupt utilities serving occupied facilities, except when authorized in writing by the school principal and authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, acceptable to Construction Manager, principal, and governing authorities.

H. Fire Protection: Maintain fire protection services during selective demolition operations.

I. Environmental Controls: Use temporary enclosures or other acceptable methods to limit dust and dirt migration. Comply with governing regulations pertaining to environmental protection.
1. Do not use water when it may create hazardous or objectionable conditions.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

A. Locate, identify, stub off, and disconnect utility services indicated to remain.
1. Provide bypass connections to maintain services to occupied areas.

3.2 DEMOLITION OPERATIONS

A. Conduct demolition to minimize interference with occupied existing building areas. Systematically perform demolition activities.

B. Provide effective air and water pollution controls required by local authorities having jurisdiction.

C. Below Grade: Completely fill below grade areas and voids resulting from demolition work. Provide fill consisting of approved earth, gravel, or sand, free of trash and debris, stones over 6 (150mm) inches in diameter, roots, or other organic matter.

## 3.3 REMOVAL OF STRUCTURES

A. Pneumatic Operated Hammers: When possible, reduce use of pneumatic operated hammers. When necessary to use pneumatic tools, locate compressors as remote from occupied building areas as possible. Obtain written approval from Construction Manager prior to operating pneumatic hammers.
   1. To break large pieces of concrete, isolate concrete from floor slabs and building structure to prevent structure borne vibration.

B. Saw Cutting: Locate compressors as remote as possible from occupied building areas.
   1. Use diamond tipped saw blades and related equipment.
   2. Saw cut portions of concrete slabs and walkways. Angle saw blade at floors and corners to cut as closely as possible to desired location.
   3. Control runoff water used with saw to prevent damage to existing materials.

## 3.4 SALVAGED MATERIALS

A. Recycling of Materials: Wherever possible, salvage materials for recycling or post construction use.

## 3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. Remove debris and rubbish resulting from operations from site. Transport and legally dispose off site.
   1. If hazardous materials are encountered during demolition operations, comply with applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.
   2. Burning of removed materials is not permitted on project site.
   3. Where possible, make use of recycling services and centers for demolished materials.

## 3.6 CLEANUP AND REPAIR

A. Upon completion of work, remove tools, equipment, and demolished materials from site.
   1. Repair demolition performed in excess of required at no additional expense.
   2. Return construction and surfaces to remain to condition existing prior to start operations.
   3. Repair adjacent construction or surfaces damaged by the work.

B. Do not allow rubbish and debris to accumulate. Clean and sweep roads, streets, drives, parking lots, sidewalks, adjoining properties, and areas affected by demolition operation on a daily basis.

C. Remove temporary protections and barriers.

END OF SECTION

SECTION 02 41 26

SELECTIVE ELECTRICAL DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Removal of existing electrical equipment, wiring, and conduit in areas to be remodeled; removal of designated construction; dismantling, cutting and alterations for completion of the Work.
2. Disposal of materials.
3. Storage of removed materials.
4. Identification of utilities.
5. Salvaged items.
6. Protection of items to remain as scheduled at end of section as indicated on Drawings.
7. Relocate existing equipment to accommodate construction.

1.2 CLOSEOUT SUBMITTALS

A. Division 1 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of capped conduits and equipment abandoned in place.

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with State standards.

1.4 PRE-INSTALLATION MEETINGS

A. Division 1 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.5 SCHEDULING

A. Division 1 - Administrative Requirements - Construction Progress Schedule: Requirements for scheduling.

B. Schedule work to coincide with new construction.

C. Perform noisy, malodorous or dusty work:
1. Between hours of 7 and 5.

D. Cease operations immediately when structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.

1.6 COORDINATION

A. Division 1 - Administrative Requirements: Requirements for coordination.

B. Conduct demolition to minimize interference with adjacent and occupied building areas.

C. Coordinate demolition work with administration staff.

D. Coordinate and sequence demolition so as not to cause shutdown of operation of surrounding areas.

E. Shut-down Periods:
1. Arrange timing of shut-down periods of in service panels with administration. Do not shut down any utility without prior written approval.
2. Keep shut-down period to minimum or use intermittent period as directed by administration.
3. Maintain life-safety systems in full operation in occupied facilities, or provide notice minimum 3 days in advance.

F. Identify salvage items in cooperation with Owner.

G. Coordinate all construction work with Owner. Owner shall coordinate all work with tenants occupying units. Abide by available working hours as directed by owner.

PART 2 PRODUCTS
Not Used

PART 3 EXECUTION

3.1 EXAMINATION

A. Division 1 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify wiring and equipment indicated to be demolished serve only abandoned facilities.

C. Verify termination points for demolished services.

3.2 PREPARATION

A. Erect, and maintain temporary safeguards, including warning signs and lights, barricades, and similar measures, for protection of the public, Owner, Contractor's employees, and existing improvements to remain.

B. Temporary egress signage and emergency lighting.

C. Coordinate storage and relocation of inhabited unit tenant possessions and belongings with Owner.

3.3 DEMOLITION

A. Demolition Drawings are based on casual field observation and existing record documents. Report discrepancies to Architect/Engineer before disturbing existing installation.

B. Remove exposed abandoned conduit. Cut conduit flush with walls and floors, and patch surfaces.

C. Remove conduit, wire, boxes, and fastening devices to avoid any interference with new installation.

D. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.

E. Disconnect or shut off service to areas where electrical work is to be removed. Remove electrical fixtures, equipment, and related switches, outlets, conduit and wiring which are not part of final project.

F. Install temporary wiring and connections to maintain existing systems in service during construction.

G. Perform work on energized equipment or circuits with experienced and trained personnel.

H. Remove, relocate, and extend existing installations to accommodate new construction.

I. Repair adjacent construction and finishes damaged during demolition and extension work.

J. Remove exposed abandoned grounding and bonding components, fasteners and supports, and electrical identification components. Cut embedded support elements flush with walls and floors.

K. Clean and repair existing equipment to remain or to be reinstalled.

L. Protect and retain power to existing active equipment remaining.

M. Perform Work in accordance with State standards.

3.4 EXISTING PANELBOARDS

A. Ring out circuits in existing panel affected by the Work. Where additional circuits are needed, reuse circuits available for reuse. Install new breakers.

B. Tag unused circuits as spare.

C. Where existing circuits are indicated to be reused, use sensing measuring devices to verify circuits feeding Project area or are not in use.

D. Remove existing wire no longer in use from panel to equipment.

E. Provide new updated directories where more than three circuits have been modified or rewired.

3.5 SALVAGE ITEMS

A. Remove and protect items indicated on Drawings to be salvaged and turn over to Owner.

B. Items of salvageable value may be removed as work progresses. Transport salvaged items from site as they are removed.

3.6 REUSABLE ELECTRICAL EQUIPMENT

A. Carefully remove equipment, materials, or fixtures which are to be reused.

B. Disconnect, remove, or relocate existing electrical material and equipment interfering with new installation.

C. Relocate existing lighting fixtures as indicated on Drawings. Clean fixtures and re-lamp. Test fixture to see if it is in good working condition before installation at new location.

3.7 CLEANING

A. Division 1 - Execution and Closeout Requirements: Requirements for cleaning.

B. Remove demolished materials as work progresses. Legally dispose.

C. Keep workplace neat.

3.8 PROTECTION OF FINISHED WORK

A. Division 1 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Do not permit traffic over unprotected floor surface.

END OF SECTION

SECTION 03 11 00

CONCRETE FORMING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form stripping.

1. 2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 03 30 00 - Cast-in-Place Concrete: Supply of concrete accessories for placement by this Section.

D. Section 03 39 00 - Concrete Curing.

E. Division 23 - Supply of mechanical items for placement by this Section.

F. Division 24 - Supply plumbing items for placement by this Section.

G. Section 26 05 10 - Basic Electrical Requirements: Supply electrical items for placement by this Section.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 318 - Building Code Requirements for Reinforced Concrete.

C. ACI 347 - Recommended Practice for Concrete Formwork.

D. PS 1 - Construction and Industrial Plywood.

1.4 DESIGN REQUIREMENTS

A. Construct formwork, shoring and bracing to conform to the requirements of the 2009 Edition of the International Building Code; resultant concrete to conform to required shape, line and dimension.

1.5 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Shop Drawings: Indicate pertinent dimensions, materials, bracing, and arrangement of joints and ties.

C. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.6 DESIGN REQUIREMENTS

A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line, dimension and finish.

B. Architect's review is for general architectural applications and features only. Design of formwork for structural stability and efficiency is the Contractor's responsibility.

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301, 318 and 347.

B. Maintain one (1) copy of each document on site.

1.8 REGULATORY REQUIREMENTS

A. Conform to IBC, latest edition, for design, fabrication, erection, and removal of formwork.

1.9 DELIVERY, STORAGE, AND PROTECTION

A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

B. Store off ground in ventilated and protected manner to prevent deterioration from moisture.

1.10 COORDINATION

A. Coordinate work under provisions of Section 01 31 13.

B. Coordinate this Section with other Sections of work which require attachment of components to formwork.

C. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, request instructions from Architect/Engineer before proceeding.

D. Coordinate all formwork, accessories, inserts, embeds and openings as to not conflict or provide adverse visual impacts not consistent with the design.

PART 2 PRODUCTS

2.1 WOOD FORM

A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   1. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, B-B (Concrete Form), Class 1, or better, mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood or lumber. Provide lumber dressed on at least two edges and one side for tight fit.

2.2 PREFABRICATED FORMS

A. Forms:
   1. Forms for Exposed Finish Concrete: Plywood, metal, or metal-framed plywood faced, to provide continuous, straight, smooth, exposed surfaces. Furnish in

largest practicable sizes to minimize number of joints and to conform to joint system shown on Drawings.

a. Overlaid plywood complying with U.S. Product Standard PS-1 “A-C or B-B High Density Overlaid Concrete Form”, Class I.

b. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.

c. Glass Fiber Fabric Reinforced Plastic Forms: Matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished concrete surfaces.

d. Pan Type: Steel of size and profile required.

2.3 FORMWORK ACCESSORIES

A. Form Ties: Removable or Snap-off type, galvanized metal, fixed length, free of defects that will not leave holes larger than one inch in diameter in concrete surface.

B. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete; to be approved by Architect/Engineer.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. Debond Form Coating as manufactured by L&M Construction Chemicals, Inc.
   b. Crete Lease 880 as manufactured by Cresset Chemical.
   c. Nox-Crete as manufactured by Nox-Chem.
   d. Clean strip Ultra J-3 VOC by Dayton Superior.

C. Dovetail Anchor Slot: Galvanized steel, 22 gage thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.

D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

E. Waterstops: Rubber or Polyvinyl chloride, minimum 1,750 psi tensile strength, minimum 50 degrees F to plus 175 degrees F working temperature range, adequate width, maximum possible lengths, ribbed profile, preformed corner sections, heat welded jointing.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings. Notify Architect prior to concrete placement that verification has occurred and dimensions correlate with drawings.

3.2 EARTH FORMS

A. Earth forming is not allowed on the exterior face of all footings and walls detailed to receive waterproofing under Section 07 11 13.

B. Hand trim sides and bottom of earth forms. Remove loose soil and moisten prior to placing concrete.

C. Place vapor barrier prior to concrete placement, in accordance with drawings and Section 03 30 00.

3.3 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301 and ACI 347. Formwork fasteners are not permitted to protrude into formwork cavity or ends to be cast into concrete.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to over-stressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores and all temporary components not required to remain as part of this finish construction.

D. Align joints and make watertight. Keep form joints to a minimum.

E. Obtain approval before framing openings in structural members which are not indicated on Drawings.

F. Coordinate this section with other sections of work which require attachment of components to formwork.

G. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement before proceeding, request instructions from Engineer.

3.4 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes which are effected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be embedded in passing through concrete work.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

E. Install waterstops continuous without displacing reinforcement.

F. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.

G. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.6 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.7 FORMWORK TOLERANCES

A. Construct formwork to maintain tolerances required by ACI 301.

3.8 FIELD QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

3.9 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION

SECTION 03 20 00

CONCRETE REINFORCING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel bars and accessories for cast-in-place concrete.

B. Application and installation of reinforcing into existing conditions.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 01 73 29 - Cutting and Patching.

C. Section 02 41 00 - Demolition.

D. Section 03 11 00 - Concrete Forming.

E. Section 03 30 00 - Cast-in-Place Concrete.

F. Section 03 35 00 - Concrete Finishing.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 318 - Building Code Requirements For Reinforced Concrete.

C. ACI SP-66 - American Concrete Institute - Detailing Manual.

D. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

E. ANSI/AWS D1.4 - Structural Welding Code for Reinforcing Steel.

F. ASTM A615 - Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.

G. ASTM A706 - Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.

H. AWS D12.1 - Welded Reinforcement Steel, Metal Inserts and Connections in Reinforced Concrete Construction.

I. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.

J. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.

K. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Shop Drawings: Prepared by a registered Professional Engineer. Indicate bar sizes, schedules, spacing, locations and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices. Indicate and coordinate work concerning reinforcement.

C. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice, ACI 301, ACI SP-66, ACI 318. Maintain one copy of each document on site.

B. Submit certified copies of mill test reports of reinforcement materials analysis.

C. Special inspections are required for this work.

1.6 QUALIFICATIONS

A. Welders' Certificates: Submit under provisions of Section 01 33 00 Certificates, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

B. Design reinforcement under direct supervision of a professional Structural Engineer experienced in design of this work and licensed in the State of Nevada.

1.7 COORDINATION

A. Coordinate work under provisions of Section 01 31 13.

B. Coordinate with placement of formwork, formed openings, embeds, inserts, depressions and other Work.

C. Coordinate with vapor barrier in Section 03 30 00.

D. Coordinate and evaluate existing conditions indicated to receive reinforcement. Report concerns to Architect.

1.8 DELIVERY, STORAGE AND HANDLING

A. Keep materials dry and well ventilated.

B. Store materials off the ground and in a dry place until placement.

C. Store materials in such a way as to accommodate easy inspection of the materials prior to installation.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: Deformed billet steel bars, plain finish. All reinforcing to be welded shall be ASTM A615, ASTM A706, grade 60 low alloy weldable steel, weld as required.
1. 60 ksi yield grade deformed for all bars #5 and larger, where specified.
2. 40 ksi yield grade deformed bars for all bars #4 and smaller, where specified.

B. Welded Steel Wire Fabric: ASTM A82, 6 x 6 x 1.4, unless indicated otherwise. Plain type in flat sheets, cold-drawn, plain finish.

2.2 ACCESSORIES

A. Tie Wire: Minimum 16 gage annealed type.

B. Supports for Reinforcement: Chairs, bolsters, bar supports, and spacers; sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.

C. Supports for Reinforcement Adjacent to Weather Exposed Concrete Surfaces: Special chairs, bolsters, bar supports, and spacers adjacent to weather exposed concrete surfaces; Type M; size and shape as required; plastic protected (CRSI, Class 1); or stainless steel protected (CRSI, Class 2).

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice, ACI SP-66, and ACI SP-66, and ACI 318.

B. Weld reinforcement in accordance with ANSI/AWS D1.4 and ANSI/AWS D12.1.

C. Locate reinforcing splices not indicated on drawings, at point of minimum stress. Review location of splices with Architect/Engineer.

D. Prepare existing conditions indicated to receive reinforcement.

2.4 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

PART 3 EXECUTION

3.1 PLACEMENT

A. Prior to placement, remove all corrosion and debris from items required by this Section. Place, support and secure reinforcement against displacement. Do not deviate from required position. Pull method is not acceptable.

B. Do not displace or damage vapor barrier. Repair barrier with manufacturer's recommended fluid sealer.

C. Accommodate and coordinate placement of formed openings, inserts and embeds.

D. Conform to IBC, latest edition, for concrete cover over reinforcement.

E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

F. Place reinforcement to obtain at least minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

G. Accurately position, support, and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

H. Avoid cutting or puncturing vapor retarder during reinforcement placement and concreting operations. Repair as required.

3.2 FIELD QUALITY CONTROL

A. Ensure reinforcement installed per Drawings, Details and Schedules, and in appropriate position. Report any variance between these documents to Architect/Engineer prior to concrete placement.

B. Performance of special inspection does not constitute acceptance of installed reinforcement or alleviate Contractor from conforming to Design Documents.

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cast-in-place concrete floors, foundations and walls.

B. Slabs on grade.

C. Vapor Barrier.

D. Cold, Control, Expansion and Contraction joint devices associated with concrete work of this Section, including joint sealants.

E. Equipment pads, light pole bases, flagpole base, and all concrete footings.

1.2 RELATED SECTIONS

A. Section 01 73 29 - Cutting and Patching.

B. Section 02 41 00 - Demolition.

C. Section 03 11 00 - Concrete Forming.

D. Section 03 20 00 - Concrete Reinforcing.

E. Section 03 35 00 - Concrete Finishing.

F. Section 03 39 00 - Concrete Curing.

G. Section 07 11 13 - Bituminous Dampproofing.

H. Section 07 90 00 - Joint Protection.

I. Divisions 21, 22 and 23.

J. Section 26 05 00 - Basic Electrical Requirements.

K. Section 31 22 13 - Rough Grading.

L. Section 31 23 16.13 - Trenching.

M. Section 31 23 23 - Fill.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 302 - Guide for Concrete Floor and Slab Construction.

C. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

D. ACI 305R - Hot Weather Concreting.

E. ACI 306R - Cold Weather Concreting.

F. ACI 308 - Standard Practice for Curing Concrete.

G. ACI 318 - Building Code Requirements for Reinforced Concrete.

H. ANSI/ASTM C618 - Coal Fly Ash and Raw or Calcinated Natural Pozzolan for Use as Mineral Admixture in Concrete.

I. ANSI/ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous Type).

J. ANSI/ASTM D1190 - Concrete Joint Sealer, Hot-Poured Elastic Type.

K. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

L. ANSI/ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

M. ASTM E 1745 - Plastic Water Vapor Retarders Used in Contact with Soil or Granula Fill Under Concrete Slabs.

N. ASTM E 1643 - Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

O. ASTM E96 - Water Vapor Transmission of Materials.

P. ASTM C33 - Concrete Aggregates.

Q. ASTM C94 - Ready-Mixed Concrete.

R. ASTM C150 - Portland Cement.

S. ASTM C494 - Chemicals Admixtures for Concrete.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Product Data: Provide data on joint devices and attachment accessories.

C. Provide data on concrete mix designs divided into, and defined as, structural building and site related including aggregates, products and admixtures.

D. Provide manufacturer's literature, installation, interfacing, coordination and instructions on vapor barrier.

E. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.5 PROJECT RECORD DOCUMENTS

A. Accurately record actual locations of embedded utilities and components which are concealed from view. Dimension and annotate accordingly, including items that have been field placed at variance with the Drawings.

B. Accurately record actual locations of found or existing utilities and components discovered and not identified on the Drawings.

C, Digital Submittal: Submit one (1) CD containing a digital copy of all project record documents submitted in hard copy format.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301.

B. Maintain one copy of each document on site.

C. Acquire cement and aggregate from same source for all work.

D. Conform to ACI 305R when concreting during hot weather.

E. Conform to ACI 306R when concreting during cold weather.

F. Special inspection is required for this work.

1.7 MOCK-UP AND FIELD SAMPLES

A. Coordinate with Section 03 11 00.

B. Provide as necessary to achieve Architect's acceptance and approval.

C. May remain as part of work.

D. Include all elements and types indicated in Drawings and Specifications.

1.8 COORDINATION

A. Coordinate work under provisions of Section 01 31 13.

B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

C. Coordination with existing conditions to achieve desired result.

D. Verify existing conditions and coordinate for difficult or unusual installation techniques.

1.9 LAYOUT

A. Red pigment chalk is prohibited from use on or around all concrete surfaces.

B. Use of this pigment color on concrete will result in defective concrete and will be required to be replaced.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Use one brand of cement throughout project unless otherwise acceptable to Architect.

1. Cement: ASTM C150, Type V - Sulphate Resistant Portland type.
2. Fine and Coarse Aggregates: ASTM C33.
3. Water: Clean and potable not detrimental to concrete.

B. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete.

2.2 ADMIXTURES

A. Chemical: ASTM C494, Type A - Water Reducing.

B. Fly Ash: ASTM C618, Class F. 18% maximum cement replacement by mass.

2.3 ACCESSORIES

A. Bonding Agent: Two component modified epoxy resin.

B. Vapor Barrier:

1. Vapor Barrier membrane must have the following properties:
   a. Minimum 15-mil thick polyolefin or polyethylene resin-based geomembrane.
   b. Manufactured from ISO certified virgin resins.
   c. Water Vapor Barrier ASTM E-1745 Meets or exceeds Class A
   d. Water Vapor Transmission Rate ASTM E-96 0.006 gr./$ft^2$/hr. or lower
   e. Permeance Rating ASTM E-96 0.01 gr./$ft^2$/hr. or lower
   f. Puncture Resistance ASTM E-1745 Minimum 2200 grams
   g. Tensile Strength ASTM E-1745 Minimum 45.0 lbf/in

2. Vapor Barrier Accessories:
   a. Seam Tape:
      (1) High Density Polyethylene Tape with pressure sensitive adhesive, non-water soluable. Minimum width 4 inches.
   b. Fluid Sealant:
      (1) Seal penetrations using pressure tape and complete seal using manufacturer's mastic.
3. Manufacturers:
   a. Stego Industries: Product - Stegowrap, 15 mil, Class A.
   b. Raven Industries: Product - Vapor Block 15.
   c. Substitutions: Under provisions of Section 01 60 00.

C. Non-Shrink Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 5,000 psi in 28 days.

2.4 JOINT DEVICES AND FILLER MATERIALS

A. Joint Filler: ASTM D1752; Closed cell polyvinyl chloride foam, resiliency recovery of 95 percent if not compressed more than 50 percent of original thickness.

B. Construction Joint Devices: Integral galvanized steel, formed to tongue and groove profile, with removable top strip exposing sealant trough, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge.

C. Expansion and Contraction Joint Devices: ASTM B221 alloy, extruded aluminum; resilient neoprene filler strip with a Shore A hardness of 35 to permit plus or minus 25 percent joint movement with full recovery; extruded aluminum cover plate, of longest manufactured length at each location, flush mounted; color as selected.

D. Membrane Curing Compound: Section 03 39 00.

E. Sealant: Cold applied.

2.5 CONCRETE MIX

A. Mix and deliver concrete in accordance with ASTM C94, Alternative No. 3.

B. Provide concrete to the following mix design:

| Concrete Use | Min. 28 Day Strength | Max. Aggregate Size |
|---|---|---|
| Conventional slabs-on-grade | 4500 psi | 3/4" |
| Walls | 4500 psi | 3/4" |
| Footings | 4500 psi | 1-1/2" |
| Courtyard slabs | 4500 psi | 3/4" |

Water/Cement Ratio (maximum):
0.45 by weight (mass) for 4500 psi concrete

Slump (plus or minus 1 inch):
4 inches (3 to 5 inches)

C. Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.

D. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.

E. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing site conditions.

B. Verify requirements for concrete cover over reinforcement.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

D. Contractor to verify vapor barrier is not damaged or broken prior to concrete placement.

3.2 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

C. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

3.3 PLACING CONCRETE

A. Place concrete in accordance with ACI 301, ACI 305, ACI 306, ACI 318, ACI 614, IBC 1905, and ASTM C94.

B. Notify the Architect and Southern Nevada Regional Housing Authority inspector a minimum of 48 hours prior to commencement of operations.

C. Ensure reinforcement, inserts, embedded parts, formed joint fillers, joint devices and are not disturbed during concrete placement.

D. Install vapor barrier under interior slabs, beneath and around building footings on grade per ASTME-1643 and manufacturer's instructions. Lap joints minimum 6 inches and seal watertight with seam tape. Seal to foundation walls to provide continuous barrier.

E. Repair vapor barrier damaged during placement of concrete reinforcing. Repair with vapor barrier material; seal tape manufacturer's fluid sealant; lap over damaged areas minimum 6 inches and seal watertight.

F. Seal all penetrations and pipes with manufacturer's fluid sealant.

G. Install joint fillers, primer and sealant in accordance with manufacturer's instructions.

H. Separate slabs on grade from vertical surfaces and finishes with 1/4 inch thick joint filler and seal per Section 07 90 00.

I. Extend joint filler from bottom of slab to within 1/8 inch of finished slab surface. Conform to Section 07 90 00 for finish joint sealer requirements.

J. Install joint devices in accordance with manufacturer's instructions.

K. Install joint device anchors. Maintain correct position to allow joint cover flush with floor and wall finish.

L. Install joint covers in longest practical length, when adjacent construction activity is complete.

M. Apply sealants in joint devices in accordance with Section 07 90 00.

N. Maintain records of concrete placement. Record date, location, quantity, air temperature, test samples taken, and slump results.

O. Place concrete continuously between predetermined expansion, control, and construction joints.

P. Do not interrupt successive placement; do not permit cold joints to occur.

Q. Saw cut joints within 24 hours after placing. Using 3/16 inch thick blade, cut into 1/4 depth of slab thickness. Do not saw cut any exposed slabs.

R. Screed floors and slabs on grade level, maintaining surface flatness of maximum 1/8 inch in 10 ft.

S. Concrete Age: No more than 90 minutes shall elapse between concrete batching and concrete placement unless approved by testing agency.

T. Concrete Placement and Quality: Shall be per IBC Section 1905 and recommendations in ACI 614, ACI 301, ACI 309 and ACI 318. Mechanically vibrate all concrete when placed, except that slabs on grade need be vibrated only around floor tendon anchors, floor ducts etc. Cast closure pour, where shown on plans around columns after column dead load is applied. Remove all debris from forms before pouring. Do not vibrate forms or reinforcing steel.

U. Segregation of Aggregates: Concrete shall not be dropped through reinforcing steel (as in walls, columns, and drop capitals) so as to cause segregation of aggregates. Unconfined fall of concrete shall not exceed 5 feet.

V. Inserts: All items to be cast in concrete such as reinforcing, dowels, bolts, anchors, pipes, sleeves, etc., shall be securely positioned in the forms and existing conditions before placing the concrete.

W. Control Joints: Unless approved otherwise, all concrete slabs on grade shall be bounded by control joints (keyed or sawcut) such that the enclosed area does not exceed 260 sq. ft. Concrete slab on grade shall be bounded by control joints as shown on Drawings. Keyed control joints need only occur at exposed edges during pouring. All other joints may be sawcut. Ratio of boundary dimensions shall not exceed 1-1/2:1.

X. Place all required reinforcement on chairs and supports.

Y. Pipes: Pipes other than electrical conduits shall not be embedded in structural concrete except where specifically approved by the engineer. Maximum pipe size shall be 1/3 of the slab thickness and located at the mid depth. Minimum spacing shall be 3 times the pipe diameter. Pipes shall not impair the strength of the member.

Z. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306.1 and as herein specified.

1. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C), and not more than 80 deg F (27 deg C) at point of placement.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

AA. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 deg F (32 deg C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.
2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
3. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.
4. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

3.4 CONCRETE JOINTS

A. Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect.

B. Provide keyways at least 1-1/2" deep in construction joints in walls, slabs, and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.

C. Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except as otherwise indicated.

D. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions.

E. Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.

F. Contraction (Control) Joints in Slabs-on-Ground: Construct contraction joints in slabs-on-ground to form panels of patterns as shown.

3.5 CONCRETE FINISHING

A. Refer to Section 03 35 00.

3.6 CURING AND PROTECTION

A. Refer to Section 03 39 00.

3.7 FIELD QUALITY CONTROL

A. Provide free access to Work and cooperate with appointed special inspection agency.

B. Submit proposed mix design (separated as required) to Architect for review prior to commencement of Work, per Section 01 33 00.

C. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.

D. Three concrete test cylinders will be taken for every 75 or less cu yds of concrete placed.

E. One additional test cylinder will be taken during cold weather concreting, cured on job site under same conditions as concrete it represents.

F. One slump test will be taken for each set of test cylinders taken.

3.8 PATCHING

A. Notify and allow Architect/Engineer to inspect concrete surfaces immediately upon removal of forms.

B. Honeycomb or embedded debris in concrete is not acceptable. Entire concrete panel, control joint to control joint, corner to corner, will be removed and replaced. Notify Architect/Engineer upon discovery. Architect will determine acceptability.

C. Epoxy adhesive for patching concrete imperfections is not acceptable.

3.9 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances, specified requirements, poor finish, or stained is required to be replaced corner to corner, joint to joint, as directed by Architect.

B. Repair or replacement of defective concrete will be determined and at the discretion of the Architect/Engineer.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

END OF SECTION

SECTION 03 35 00

CONCRETE FINISHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Concrete surface finishing and in conjunction with Special Finishing in Section 32 13 13 – Concrete Paving

1.2 RELATED SECTIONS

A. Section 03 11 00 - Concrete Forming.

B. Section 03 20 00 - Concrete Reinforcing.

C. Section 03 30 00 - Cast-in-Place Concrete.

D. Section 03 39 00 - Concrete Curing.

E. Section 32 13 13 – Concrete Paving.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Provide data in finishing compounds, product characteristics, compatibility and limitations.

C. Samples: Submit samples of materials as requested by Architect, including names, sources, and descriptions.

D. Manufacturer's Installation Instructions: Indicate criteria for preparation and application.

E. Submit letters from manufacturers and contractors. Verify compatibility of finishes with adhesives, sealants, and materials and methods of construction.

F. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:
1. ACI 301 "Specifications for Structural Concrete for Buildings".
2. ACI 318 "Building Code Requirements for Reinforced Concrete".
3. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice".

1.5 PROJECT CONDITIONS

A. Surface Protection: Protect adjacent finish materials against spatter during concrete placement.

B. Environmental Conditions for Concrete to Receive Staining: Maintain an ambient temperature of between 50 and 90-deg F during application and at least 48 hours after application.

C. Protection: Precautions shall be taken to avoid damage or contamination of any surfaces near the work zone. Protect completed stain work from moisture or contamination.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products under provisions of Section 01 60 00.

B. Deliver materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.1 MANUFACTURER

A. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

1. Air Entraining Admixture:
   a. "Air-Mix"; Euclid Chemical Co.
   b. "MB-VR or MB-AE"; Master Builders.
   c. "Darex AEA" or "Daravair"; W.R. Grace.
2. Water Reducing Admixture:
   a. "WRDA Hycol"; W.R. Grace.
   b. "Eucon WR-75"; Euclid Chemical Co.
   c. "Pozzolith Normal"; Master Builders.
   d. "Plastocrete 160"; Sika Chemical Corp.
3. Super Plasticizer:
   a. "WRDA 19" or "Daracem"; W.R. Grace.
   b. "Sikament"; Sika Chemical Corp.
   c. "Eucon 37"; Euclid Chemical Co.
   d. "Rheobuild"; Master Builders.
4. Water Reducing Non Chloride Accelerator:
   a. "Accelguard 80"; Euclid Chemical Co.
   b. "Pozzolith High Early"; Master Builders.

5. Water Reducing Non Chloride Retarder:
   a. "Edoco 20006"; Edoco Technical Products.
   b. "Pozzolith Retarder"; Master Builders.
   c. "Eucon Retarder 75"; Euclid Chemical Co.
   d. "Daratard"; W.R. Grace.
6. Waterstops
   a. Rubber:
      1) The Burke Co.
      2) Progress Unlimited.
      3) Williams Products.
      4) Edoco Technical Products.
   b. Polyvinyl Chloride:
      1) AFCO Products.
      2) The Burke Co.
      3) Edoco Technical Products.
      4) W.R. Meadows.
      5) Schleigel Corp.
      6) Vinylex Corp
7. Non-Metallic Grout:
   a. "Set Grout"; Master Builders.
   b. "Duragrout"; L & M Const. Chemical Co.
   c. "Five Star Grout"; U.S. Grout Corp.
   d. "Non Shrink GP Grout" US Spec.

8. Liquid Curing Compound:
   a. Interior:
      1) “L & M Cure R” or “L & M Cure DR”; L & M Construction Chemicals, Inc.
      2) “Kurez VOX” or “Kurez DR”; The Euclid Chemical Co.
      3) “1100 Clear” or “3100 Clear”; W. R. Meadows.
      4) “Maxcure Resin” clear, US Spec.
   b. Exterior:
      1) “L & M Cure R-2"; L & M Construction Chemicals, Inc.
      2) “1200 White”; W. R. Meadows.
      3) “Maxicure Resin” white, US Spec.
9. Bonding Compound:
   a. Polyvinyl Acetate (Interior Only):
      1) "Euco Weld"; Euclid Chemical Co.
      2) "Weldcrete"; Larsen Products Corp.
      3) “Everweld”; L & M Construction Chemicals, Inc.
      4) “Bondcoat”, US Spec.
   b. Acrylic or Styrene Butadiene:
      1) "Everbond"; L & M Construction Chemicals.
      2) "Acryl Set”; Master Builders.
      3) "Acryl 60"; Thoro.
      4) "Daraweld C"; W.R. Grace Construction Products Division.
      5) “Acrylcoat” or “Multicoat”, US Spec.
10. Epoxy Adhesive:
   a. "Thiopoxy"; W.R. Grace.
   b. "Epoxtite"; A.C. Horn, Inc.
   c. "Sikadur Hi-Mod"; Sika Chemical Corp.
   d. "Euco Epoxy 452 or 620"; Euclid Chemical Co.
   e. "Patch and Bond Epoxy"; The Burke Co.
   f. “Maxibond 2500”, US Spec.
11. Evaporation Control:
   a. “E-Con”; L & M Construction Chemicals, Inc.
12. Concrete Densifier, Hardener, Sealer and Waterproofer:
   a. "FGS Hardener Plus with the FGS Permashine System"; L&M Construction Chemicals, Inc.

## PART 3 EXECUTION

### 3.1 INSTALLATION

A. Coordinate the installation of joint materials and vapor retarders with placement of forms and reinforcing steel.

B. Preparation: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Where used, moisten wood forms immediately before placing concrete.

C. Installation Tolerances:
1. Horizontal: Minimum Flatness FF of 30 and Minimum Levelness FL of 25.
2. Vertical: Comply with ACI requirements for horizontal, vertical, and story to story tolerances.

3.2 INSTALLATION

A. Finish:

1. Rough Form Finish: Formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.
2. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, painting, or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas.
3. Smooth Rubbed Finish: Provide smooth rubbed finish to concrete surfaces, which have received smooth form finish treatment, not later than one day after form removal.
    a. Moisten concrete surfaces and rub with carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.
4. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.
5. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.
    a. After placing slabs, plane surface to tolerances for floor flatness (F ) of 15 and floor levelness (F ) of 13. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms, or rakes.
6. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.
    a. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both, Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to tolerances of F 18 - F 15. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
7. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint, or other thin film finish coating system.
    a. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of F 20 - F 17. Grind smooth surface defects which would telegraph through applied floor covering system.
8. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

9. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete.
   a. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.
10. Special Finishes: Refer to Section 32 13 13 and Drawings for Colors where applicable.

B. Miscellaneous Concrete:
1. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place, and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
2. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
3. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

END OF SECTION

SECTION 03 39 00

CONCRETE CURING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Initial and final curing of horizontal and vertical concrete surfaces.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 03 30 00 - Cast-In-Place Concrete.

C. Section 03 35 00 - Concrete Finishing.

1.3 REFERENCES

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 302 - Recommended Practice for Concrete Floor and Slab Construction.

C. ACI 308 - Standard Practice for Curing Concrete.

D. ASTM C171 - Sheet Materials for Curing Concrete.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Product Data: Provide data on curing compounds, product characteristics, compatibility and limitations.

C. Manufacturer's Installation Instructions: Indicate criteria for preparation and application.

D. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products under provisions of Section 01 60 00.

B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.1 MATERIALS

A. Membrane Curing Compound: ASTM C309 Type Class A and B, Acrylic dissipating resin type, clear without fugitive dye; Aqua Resin Cure as manufactured by Burke, Kure-n-Seal as manufactured by Sonneborn, or Master Seal by Master Builders. Not for use where sealers or ceramic tile are scheduled.

B. Water: Potable and not detrimental to concrete.

2.2 ACCEPTABLE MANUFACTURERS

A. Burke - Aqua Resin Cure.

B. Sonneborn - Kure-N-Seal.

C. Master Builders - Master Seal.

D. Or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate surfaces are ready to be cured.

3.2 EXECUTION - HORIZONTAL SURFACES

A. Cure floor surfaces in accordance with ACI 308.

B. Spray water over floor slab areas and maintain wet for 7 days or apply membrane curing compound in accordance with manufacturer's instructions in 2 coats with second coat at right angles to first.

3.3 EXECUTION - VERTICAL SURFACES

A. Cure surfaces in accordance with ACI 308.

B. Spray water over surfaces and maintain wet for 7 days or apply membrane curing compound in accordance with manufacturer's instructions in 2 coats with second coat at right angles to first.

3.4 PROTECTION OF FINISHED WORK

A. Do not permit traffic over finish, unprotected floor surface.

B. Protect concrete floor slabs with continuous 1/8” medium density fiberboard, cut to fit space, and fasten to form monolithic protected surface.

C. Contractor is responsible for protecting installed work to prevent all stains, markings, and defects. Damaged items that cannot be repaired to the Architect’s satisfaction shall be replaced with new at no additional cost to Owner.

END OF SECTION

SECTION 05 52 00

METAL RAILINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Steel tube and pipe handrails, and fittings.

1.2 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

A. Section 03 30 00 - Cast-In-Place Concrete: Placement of anchors in concrete.

1.3 RELATED SECTIONS

A. Section 09 90 00 - Painting and Coating: Paint finish.

1.4 REFERENCES

A. ASTM A36 - Structural Steel.

B. ASTM A53 - Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe.

C. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes.

D. ADAAG - Americans with Disabilities Act Accessibility Guidelines, latest edition.

E. SSPC - Steel Structures Painting Council.

1.5 DESIGN REQUIREMENTS

A. Railing assembly, wall rails, and attachments to resist lateral force of 200 lbs at any point without damage or permanent set.

B. Handrails to comply with size and wall clearance requirements of ADAAG.

1.6 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories. Indicate out-of-line tolerance to be adhered to for fabrication and installation of handrails.

C. Submit calculations for rails prepared by a Professional Structural Engineer licensed in the State of Nevada.

D. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.7 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on Drawings and shop drawings.

PART 2 PRODUCTS

2.1 STEEL RAILING SYSTEM

A. Steel Tubing: ASTM A500, Grade B.

B. Pipe: ASTM A53, Grade B.

C. Bars and Plates: ASTM A36.

D. Guardrails and Posts: 1-1/2 inch diameter Schedule 40 steel pipe or steel tubing as shown on Drawings; welded joints.

E. All Handrails: 1-1/2 inch diameter Schedule 40 steel pipe; welded joints.

F. Fittings: Elbows, T-shapes, wall brackets, escutcheons; cast steel.

G. Mounting: Adjustable brackets and flanges, with steel inserts for casting in concrete. Prepare backing plate for mounting in wall construction.

H. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.

I. Splice Connectors: Steel welding collars.

J. Shop and Touch-Up Primer: SSPC 15, Type 1, red oxide for plain steel; SSPC 20, Type 1, zinc rich type for galvanized steel.

2.2 FABRICATION

A. Fit and shop assemble components in largest practical sizes, for delivery to site.

B. Fabricate components with joints tightly fitted and secured.

C. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.

D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.

E. Continuously seal joined pieces by continuous welds.

F. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

G. Accurately form components to each other and to building structure.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

B. Beginning of installation means erector accepts existing conditions.

3.2 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or placed in partitions with setting templates, to appropriate Sections.

3.3 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.

B. Provide anchors, plates, angles required for connecting railings to structure. Anchor railing to structure.

C. Field weld anchors as indicated on shop drawings. Grind welds smooth. Immediately after erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

D. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.4 ERECTION TOLERANCES

A. Maximum Variation From Plumb: 1/8 inch per vertical member.

B. Maximum Offset From True Alignment: 1/8 inch in 10 feet.

3.5 FINISH SCHEDULE

A. Pipe, tube, and bar components, galvanized and plain; shop primed.

B. Finish Painting: Paint as scheduled in Section 09 90 00 - Painting and Coating. Color: As scheduled on the Drawings.

END OF SECTION

SECTION 06 10 00

ROUGH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Wall sheathing.

B. Miscellaneous framing and sheathing.

C. Blocking and furring.

1. 2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 06 20 00 - Finish Carpentry.

1.3 REFERENCES

A. ASTM D 5516 and ASTM D 5664 - Standard Test Method for Evaluating the Effects of Fire Retardant Treatments.

B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

C. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.5 QUALITY ASSURANCE

A. Source Limitations for Fire-Retardant-Treated Wood: Obtain each type of fire-retardant-treated wood product through one source from a single producer.

B. Standards:
1. Grading: Conform with applicable requirements of DOC PS 20, *American Softwood Lumber Standard*, by the American Lumber Standards Committee (ALSC), the National Grading Rule for Dimensional Lumber and to grading rules of manufacturer's association under whose rules the lumber is produced.
2. Preservative Treatment: Applicable standards of the American Wood Preservers Association.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Deliver materials to site in manufacturer's original unopened packaging with labels intact.

B. Storing: Stack lumber, plywood, and other panels; place spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

C. Environmental Requirements: Store materials for which a maximum moisture is specified in areas where humidity can be controlled.

## PART 2 PRODUCTS

### 2.1 LUMBER MATERIALS

A. Lumber Grading Rules: WCLIB and WWPA.

B. All sawn lumber shall have the minimum grade specified in the General Structural Notes.

### 2.2 SHEATHING MATERIALS

A. Wood Structural Panel Roof Sheathing: APA ratings, exposure types, thickness, span rating and nailing are as specified in the General Structural Notes.

B. Wood Structural Panel Wall Sheathing: APA ratings, exposure types, thickness, span rating and nailing are as specified in the General Structural Notes.

C. Telephone and Electrical Panel Boards: 3/4” thick fire retardant plywood.

### 2.3 ACCESSORIES

A. Fasteners and Anchors:
1. Fasteners: Hot-dipped galvanized steel for treated wood locations, unfinished steel elsewhere. See General Structural Notes on Drawings for exact fastener requirements.

B. Structural Framing Connectors and Joist Hangers: Hot-dipped galvanized steel, sized to suit framing conditions, Strong-Tie manufactured by Simpson. See General Structural Notes for further requirements.

C. Building Paper: Tyvek Commercial Wrap or approved equal.

### 2.4 WOOD TREATMENT PROCESSES

A. Fire Retardant: Chemically treated and pressure impregnated; capable of providing a maximum flame spread/smoke development rating of 25/50 for plywood in accordance with ASTM E84; and certification of noncombustability in accordance with ASTM E-136.

### 2.5 SHOP TREATMENT OF WOOD MATERIALS

A. Shop pressure treatment to telecommunications terminal boards where indicated on Drawings.

B. Provide UL approved identification on fire retardant treated sheet materials.

## PART 3 EXECUTION

### 3.1 FRAMING

A. Set structural members level and plumb, in correct position.

B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in alignment until completion of erection and installation of permanent bracing.

C. Place horizontal members, crown side up.

D. Construct framing members full length without splices.

E. Double members at openings over 36 inches wide. Space short studs over and under opening to stud spacing.

F. Bridge joists and framing as detailed. Fit solid blocking at ends of members.

G. Place full width continuous sill flashings under framed walls on cementitious foundations. Lap flashing joint 6 inches.

H. Coordinate installation of wood decking, LVL and PSL joists, prefabricated wood trusses, glue laminated structural units, and dimensional lumber members.

3.2 SHEATHING

A. Secure roof sheathing with longer edge (strength axis) perpendicular to framing members and with ends staggered and sheet ends over bearing.

B. Install solid edge blocking between sheets.

C. Secure wall sheathing with long dimension parallel to wall studs, with ends over firm bearing.

D. Place wood structural panel sheeting at building corners for horizontal distance of 48 inches or as indicated on Drawings.

E. Place building paper horizontally over wall sheathing; weather lap edges and ends.

F. Install telephone and electrical panel backboards with plywood sheathing material where shown on Drawings.

3.3 BACKING, FURRING, STRIPPING AND BLOCKING

A. Install where indicated on Drawings and where required for installation and attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
   1. Provide fireproofed wood backing approved by building official where required by code in noncombustible or fire-rated construction.

3.4 TOLERANCES

A. Framing Members: 1/4 inch from indicated position, maximum.

B. True Position Flatness of Decking: 1/4 inch in 10 feet maximum, and 1/2 inch in 30 feet maximum from planes indicated on Drawings.

END OF SECTION

SECTION 06 20 00

FINISH CARPENTRY

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Finish carpentry items, other than shop prefabricated casework.

B. Hardware and Attachment accessories.

C. Miscellaneous blocking and casework support construction.

D. Wood door frames.

E. Closet rods and supports.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements

B. Section 08 14 00 - Wood Doors.

C. Section 09 90 00 - Painting and Coating: Painting and finishing of finish carpentry items.

D. Section 12 35 30 - Residential Casework: Fabricated cabinet work.

1.3 REFERENCES

A. ANSI A208.1 - Mat Formed Wood Particleboard.

B. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

C. ASTM E136 - Test Method for Behavior of Materials in a Vertical Tube Furnace.

D. Architectural Woodwork Institute (AWI) - Quality Standards.

E. AWPA (American Wood Preservers Association) C20 - Structural Lumber Fire Retardant Treatment by Pressure Process.

F. PS 1 - Construction and Industrial Plywood.

G. PS 20 - American Softwood Lumber Standard.

H. BHMA A156.9 - Cabinet Hardware.

I. American Hardboard Association (AHA).

J. Wood Moulding & Millwork Producers Association (WMMPA).

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories to a minimum scale of 1-1/2 inch to 1 foot.

C. Product Data: Provide certification of passing of Test Method ASTM E-136 for fire retardant treated materials. Provide product data for each factory-fabricated product. Include construction details, material descriptions, dimensions of individual components and profiles, textures and colors.

D. Provide instructions for attachment hardware and finish hardware.

E. Samples:
1. Hardwood plywood - 2 samples; 6 inch x 6 inch.
2. Hardwood/Softwood Trim - 2 samples; 12 inches long.

F. Digital Submittal: Submit one (1) CD containing a digital copy of all shop drawings, product data, and color charts submitted in hard copy format.

1.5 REGULATORY REQUIREMENTS

A. Conform to ASTM E-136 for fire retardant, flame spread and smoke development requirements.

1.6 QUALITY ASSURANCE

A. Fabricator Qualifications: Company specializing in fabricating the products specified in this Section with a minimum of five (5) years documented experience fabricating items similar in size and scope to products on this project.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00.

B. Protect work from moisture damage. Provide for air circulation within and around stacks and temporary coverings. Protect finished surfaces with removable wrapping or coating that will not bond to finish.

1.8 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on the shop drawings.

1.9 PROJECT CONDITIONS

A. Environmental Limitations:
1. Interior: do not deliver or install interior finish carpentry until building is enclosed and weatherproofed and humidity levels can be controlled during the remainder of the construction.
2. Exterior: Proceed with installation when weather conditions are within manufacturer's requirements.

1.10 COORDINATION

A. Coordinate work under provisions of Section 01 31 13.

B. Coordinate the work with mechanical and electrical rough-in, installation of adjacent components, and paint work.

PART 2 PRODUCTS

2.1 LUMBER MATERIALS

A. Softwood Lumber: PS 20; Douglas Fir species, plain sawn, maximum moisture content of 8 percent; with vertical grain; paint grade.

B. Hardwood Lumber: Graded in accordance with AWI Premium; plain sawn, maximum moisture content of 6 percent; with vertical grain, of quality suitable for transparent finish.

2.2 SHEET MATERIALS

A. Softwood Plywood: PS Grade C-D; veneer core; Douglas Fir face species, plain sliced. Provide Marine Grade at locations subject to moisture.

B. Hardwood Plywood: Graded in accordance with AWI premium; veneer core, type of glue recommended for application; White Birch face species, plain sliced.

C. Wood Particleboard: ANSI A208.1 Type 1; composed of wood chips, medium density, made with high waterproof resin binders; not emitting significant quantities of formaldehyde; of grade to suit application; sanded faces.

D. Hardboard: Pressed wood fiber with resin binder, standard tempered grade, 1/4 inch thick, smooth two sides.

2.3 FASTENERS AND HARDWARE

A. Fasteners: Of size and type to suit application; paint finish in concealed locations; countersink and plug in exposed locations. For trim locations, nail and staple per ASTM F1667.

B. Concealed Joint Fasteners: Threaded steel.

C. Floor Mount Angle Iron for Casework Support Walls: Bent steel bar, 1/4" x 1" x 8" long.

2.4 ACCESSORIES

A. Lumber for Shimming, Blocking, and Shelving Grounds: Softwood lumber of Douglas Fir species.

B. Edge Trim: Hardwood lumber as scheduled, this Section.

C. Sealants: As specified in Section 07 90 00 - Interior Joint Sealants. Color to match adjacent surface.

2.5 WOOD TREATMENT PROCESSES

A. Fire retardant: Chemically treated and pressure impregnated; capable of providing a maximum flame spread/smoke development rating of 25/50 for plywood and dimensional lumber in accordance with ASTM E84; and certification of noncombustability in accordance with ASTM E-136. Preservatives containing arsenic or chromium are not to be used.

2.6 SHOP TREATMENT OF WOOD MATERIALS

A. Shop pressure treatment to wood materials requiring UL fire resistive rating to telecommunications terminal boards.

B. Provide UL approved identification on fire retardant treated lumber and sheet materials.

C. Deliver fire retardant treated materials cut to required sizes. Minimize field cutting.

D. Redry wood after pressure treatment to maximum 6 percent moisture content.

2.7 FABRICATION

A. Fabricate to AWI, ANSI and PS standards as indicated.

B. Shop-assemble work for delivery to site, permitting passage through building openings.

C. Fit exposed sheet material edges with 3/8 inch matching hardwood edging. Use one piece for full length only.

D. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.

E. MDF Base/Trim:
1. Sand work smooth.
2. Prime all surfaces including end cuts.
3. Install as recommended by manufacturer. Secure materials in place, plumb and level.
4. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal gaps.
5. Prepare surface for paint color as indicated on drawings in accordance with Section 09 90 00.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify adequacy of backing and support framing. Examine substrates, with installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. Beginning of installation means installer accepts existing conditions.

C. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.2 INSTALLATION

A. Install work in accordance with AWI Premium Quality Standards as indicated for materials being installed.

B. Set and secure materials and components in place, plumb and level.

C. Install casework support walls with 2 x 4 studs at 24" o.c. with 2 x 4 top and bottom plate. Sheath with softwood plywood on concealed side. Attach wall to floor slab with angle iron mounts at 24" o.c., staggered each side.

D. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps. Woodwork with gaps larger than 1/32 inch must be removed and replaced.

E. Countersink fasteners, fill surface flush, and sand where face fastening is unavoidable.

F. Coordinate finish carpentry with materials and system in or adjacent to it. Provide cutouts for mechanical and electrical items that penetrate finish carpentry.

G. Interior Frames:
   1. Refer to drawings for frame profiles. Install with minimum number of joints practical, using full-length pieces from maximum lengths of lumber available. Do not use pieces less than 24 inches long, except where necessary.
      a. Stagger joints in adjacent and related standing and running trim.
      b. Cope at returns and miter at corners to produce tight-fitting joints with full-surface contact throughout length of joint. Use scarf joints for end-to-end joints.
      c. Plane backs of casings to provide uniform thickness across joints, where necessary for alignment.
      d. Match color and grain pattern across joints.
   2. Use only hot-dip galvanized or aluminum finish or casing nails.
   3. Do not face nail base, moldings, jambs, casing, trim or rails scheduled to receive stained or clear finish, blind nail only.
      a. Where blind nailing is not possible, drill pilot holes at locations best hidden in finished work and as approved by Architect.
   4. Install trim after gypsum board joint finishing operations are completed.
   5. Set nails for putty stopping in surfaced members.
   6. Hammer marks are not acceptable on exposed finished surface and are subject to rejection of member by Architect.
   7. Fill gaps, if any, between base, molding, jambs, trim and wall with plastic wood filler, sand smooth, and finish same as wood base, if finished.

H. Provide and install other miscellaneous millwork items and related items required to complete the Work.

I. Complete the finishing work specified in this Section to the extent not completed at shop or before installation of woodwork. Fill nail holes with matching filler where exposed, prior to finishing.

## 3.3 PREPARATION FOR SITE FINISHING

A. Site Finishing: Refer to Section 09 90 00 – Paint and Coating.

B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials. Prime coat unfinished metal parts prior to installation.

C. Prior to installing finish carpentry, condition materials per manufacturer's recommendations.

## 3.4 ERECTION TOLERANCES

A. Maximum Variation from True Position: 1/16 inch.

B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

## 3.5 CLEANING

A. Clean finish carpentry on exposed and semi-exposed surfaces. Touchup factory-applied finishes to restore damaged or soiled areas.

B. During the course of the work and on completion, remove and dispose of excess materials, equipment and debris from premises. Leave work in clean condition.

## 3.6 SCHEDULE

A. Softwood Lumber:
   1. Shelving Supports and Casework Supports: Douglas Fir No. 2; prepare for paint finish – paint to match existing.
   2. Counter Support Wall Studs where shown on Drawings: Douglas Fir No. 2.

B. Softwood Plywood:
   1. Shelving: White birch; 3/4" thick with squared front edge; prepare for paint finish - paint to match existing.
      a. Adjustable Shelving Hardware: Shelving hardware based off of Knape and Vogt 255 series pilaster standards.
         Dimensions: 5/8” wide x 3/16” deep x 72” long.
         Finish: Steel, 23 Gauge, painted white.
         Supports: 256 Steel shelving supports painted white.
   2. Shelf vertical supports; gussets: White Birch; 3/4" thick; prepare for paint finish – paint to match existing.
   3. Sheathing on Casework Support Walls: Douglas Fir; 1/2" thick; prepare for paint finish.

C. Hardwood Lumber:
   1. Shelf Edge Trim: White Birch; prepare for stain finish.
   2. Exposed Framing at Counters as Shown on Drawings: White Birch; prepare for stain finish.
   3. Base and Trim: White Birch; prepare for stain finish.

D. Hardwood Plywood (HPVA HP-1):
   1. Exposed counter finish material as shown on drawings; White Birch; 1/2” thick; prepare for stain finish.
   2. Countertop structure (substrate for plastic laminate materials): 3/4" thick; prepare top surface for application of plastic laminate finishes; prepare concealed surfaces per Section 09 90 00.

E. Plastic Laminate: As specified in Section 12 35 30 - Residential Casework and Section 12 36 23 Plastic Laminate Countertops.

F. Clothes Rods: 1-1/2 inch diameter, clear, kiln-dried hardwood rods or softwood rods with metal rosettes at ends.

G. Fire-Rated Interior Door Frames: Where indicated to be fire-rated, provide products fabricated from fire-retardant treated wood products with veneered, exposed surfaces.
   1. Units shall be tested for use in door assemblies per ASTM E 152 by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.
   2. Identify fire-rated frames with appropriate label of applicable testing and inspecting agency.
   3. Fire Rating: As indicated on Drawings.

H. Frames and Jambs:
   1. Quality Standard: Comply with AWI Section 900.
   2. Grade: Custom.
   3. Wood Species: Any closed-grain hardwood.
   4. Prepare surface for paint color to match existing in accordance with Section 09 90 00.

I. MDF Base/Trim: As scheduled, profiles to match existing conditions. Prepare surface for paint color to match existing in accordance with Section 09 90 00.

END OF SECTION

SECTION 07 21 16

BLANKET INSULATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Batt insulation in soffit and ceiling construction.

1.2 RELATED SECTIONS

A. Section 06 10 00 - Rough Carpentry: Framing.

B. Section 07 84 00 - Firestopping.

C. Section 09 21 16 - Gypsum Board Assemblies: Installation of acoustical insulation.

1.3 REFERENCES

A. ASTM C665 - Mineral Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.

B. ASTM E84 - Test Method for Surface Burning Characteristics of Building Materials.

1.4 SYSTEM DESCRIPTION

A. Materials of this Section shall provide continuity of thermal barrier at building enclosure elements.

1.5 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Product Data: Provide data on product characteristics, performance criteria, and limitations.

C. Digital Submittal: Submit one (1) CD containing a digital copy of product data submitted in hard copy format.

1.6 COORDINATION

A. Coordinate Work under provisions of Section 01 31 13.

PART 2 PRODUCTS

2.1 MANUFACTURERS - INSULATION MATERIALS

A. Owens-Corning: Product - Flame Spread 25.

B. Manville: Product - R-11 Thermal/Acoustical Batt for Acoustical Installation.

C. Certainteed.

D. Knauf Fiberglass Insulation.

E. Or approved equal.

2.2 MATERIALS

A. Batt Insulation: ASTM C-665 Type II; glass fiber batts; preformed, friction-fit type; faced on one side; 6 inch thick.
   1. Thermal Resistance: R values as shown on Drawings.
   2. Roll Size: 15-3/4" width or as required for fit between framing members.
   3. Facing: Faced on one side with polypropylene reinforced scrim.
   4. Flame/Smoke Properties: 25/50 per ASTM E84.

B. Acoustical Insulation: ASTM C-665 Type I; glass fiber batts; preformed, friction-fit type; no-membrane surface; 3-1/2 inch thick, minimum.

C. Tape: Polyethylene self-adhering type, 2 inch wide.

D. Insulation Fasteners: Steel impale spindle and clip on flat metal base, self adhering backing, length to suit insulation thickness, capable of securely and rigidly fastening insulation in place.

E. Wire Mesh: Galvanized steel, hexagonal wire mesh.

F. Wire-up Restraining: 16 ga. galvanized steel wire.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

3.2 INSTALLATION

A. Install insulation in accordance with insulation manufacturer's instructions.

B. Install in wall spaces without gaps or voids.

C. Trim insulation neatly to fit spaces.

D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation. Leave no gaps or voids.

E. Install facing of insulation facing any above ceiling plenum space. In no case shall fiberglass fibers be exposed to the atmosphere within plenums.

F. Install vapor barrier facing warm side of building spaces. Lap ends of membrane between framing members.

G. Tape ends and tears or cuts in membrane to ensure airtight installation.

H. Install wire-up restraints per insulation manufacturer's instructions; diagonally every 18 to 24 inches.

3.3 CLEANING

A. During the course of the Work and on completion of the Work, remove excess materials, equipment and debris and dispose from premises.. Leave Work in clean condition.

B. Protection: Take precautions to protect insulation, both during and after installation, from damage of any kind until covered.

END OF SECTION

SECTION 07 84 00

FIRESTOPPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Through penetration smoke protection for all smoke partitions.

B. Construction joint firestopping occurring within smoke partitions, floors, the intersection of smoke partitions to exterior walls, and the intersection of top of smoke partitions to roof deck.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 03 30 00 - Cast-in-Place Concrete.

C. Section 07 90 00 - Joint Sealers.

D. Section 09 21 16 - Gypsum Board Assemblies: Gypsum wallboard construction.

E. Divisions 21, 22 and 23 - Mechanical.

F. Division 26 - Electrical.

1.3 REFERENCES

A. ASTM E119 - Method for Fire Tests of Building Construction and Materials.

B. UL - Fire Resistance Directory:
1. Through Penetration Firestop Systems (XHEZ).
2. Through Penetration Firestop Devices (XHJI).
3. Fill, Void, or Cavity Material (XHHW).
4. Joint Systems (XHBN).

1.4 DEFINITIONS

A. Firestopping: A material or combination of materials placed in openings in a fire-rated assembly (wall, floor, etc.) or smoke partition to maintain the integrity of the fire-rating of that wall, floor, or other assembly, by arresting the movement of smoke or gasses through openings in that assembly.

B. Firesafing: Stuffing material used as part of a firestop assembly to provide structural support to the fluid-applied firestopping material.

C. System: A specific firestop material or combination of materials in conjunction with a specific wall or floor construction type and a specific penetrant(s), as defined by a recognized testing laboratory.

D. Barrier: Any wall, partition, enclosure, or floor that has an hourly fire and smoke rating.

E. Through-penetration: Any penetration of a fire-rated wall, floor, or smoke partition that completely breaches the barrier.

1.5 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. UL Tested Systems: Submit details from the UL Fire Resistance Directory (most recent edition) indicating the method of installation for each and every field condition.

C. Product Data: Submit manufacturer's product data for each type of firestop material to be installed. Literature shall indicate preparation and installation instructions, product characteristics, performance and test data from the UL Fire Resistance Directory, where a tested system exists.

D. Material Safety Data Sheets (MSDS): Submit MSDS for each firestop product.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Shop Drawings: Submit job specific shop drawings showing each condition requiring firestopping of a penetration or gap. Drawings must be in strict accordance with the tested firestopping system. Provide information on materials used, attachment, method of installation and relationship to all adjacent construction. Also submit shop drawings for any other areas where tested system data is unavailable, showing proposed materials, attachment and adjacent construction in accordance with manufacturer's data.

G. Installers may submit firestopping data and shop drawing along with those of their primary trades.

H. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum 5 years documented experience.

B. Installers: Contractors approved by the firestop manufacturer with minimum 5 years documented experience. All installers shall install firestopping compatible with that of other trades. General Contractor to coordinate these installations as to compatibility and Code compliance.

1.7 QUALITY ASSURANCE

A. When project is ready for installation of through-penetration smoke protection, coordinate with the Architect to select an area to be used to demonstrate the installation methods and procedures for each type of condition. This mock-up area can be incorporated into the Work. Inspect smoke partitions.

1.8 REGULATORY REQUIREMENTS

A. For penetrations and head-of-wall joint conditions in smoke resistive partitions required at incidental areas by IBC Section 302.1.1.1, firestop systems specified in this Section shall be installed or the Contractor may provide other penetration sealers along with project-specific engineering data proving compliance with the requirements of IBC 302.1.1.1 and acceptable to the governing building authorities.

B. For unique firestop conditions not specifically conforming to previously tested and listed systems, the manufacturer must provide project-specific engineering data acceptable to the governing building authorities.

1.9 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to project site in manufacturer's original unopened containers, with intact product labels showing product name and number, batch number, date of manufacturer and handling precaution statements in accordance with Section 01 60 00.

B. Store products in weather protected environment, clear of ground and moisture.

1.10 ENVIRONMENTAL CONDITIONS

A. Do not install materials when temperature or moisture conditions are outside the range of acceptable conditions as required by materials manufacturers.

B. Assure that required conditions are maintained during material curing times.

1.11 PRE-INSTALLATION CONFERENCE

A. Convene two weeks prior to commencing work of this Section.

B. Provide two weeks written notice of time and date of meeting to Owner and Architect.

C. Review installation procedures and coordination required with related work.

D. Contractor to provide all UL (Underwriters Laboratories, Inc.) / WH (Warnock Hersey) approved application details for all intended installations.

E. The following personnel are required to be in attendance:
1. General Contractor’s Superintendent.
2. Prime Subcontractors involved.
3. Architect’s Representative.

PART 2 PRODUCTS

2.1 GENERAL

A. Firestopping sealants must be flexible, allowing for cyclical movement of building elements and for normal inertial pipe movement.

B. Firestopping materials shall not shrink upon drying as evidence by cracking or pulling back from contact surfaces.

C. All firestopping materials shall be moisture resistant and may not dissolve in water after curing.

D. All firestopping materials shall be non-toxic, non-hazardous and lead or asbestos-free.

E. Material used shall be in accordance with the manufacturer's written installation instructions.

2.2 ACCEPTABLE MANUFACTURERS - FOR USE IN UL LISTED FIRE RESISTIVE SYSTEMS

A. Specified Technologies, Inc. (SpecSeal).

B. Hevi-Duty/Nelson.

C. Hilti.

D. Tremco.

E. 3M.

F. Rectorseal/Metacaulk.

G. A/D Fire Protection Systems.

H. Dap Inc.

I. Passive Fire Protection Partners.

J. Johns Manville International, Inc.

K. National Gypsum Co.

L. Nuco Inc.

M. United States Gypsum Co.

N. W. R. Grace & Company - CONN.

O. Fire Protection Technologies Inc.

P. Or approved equal.

2.3 SEALANT MATERIALS - FOR USE IN UL LISTED FIRESTOP OR HEAD-OF-WALL JOINT SYSTEMS

A. Latex Intumescent Sealant:
1. SpecSeal 100
2. Nelson CLK.
3. Hilti FS-ONE
4. 3M Fire Barrier CP25WB+
5. Tremstop - IA
6. Or other latex intumescent sealants by above listed manufacturers.

B. Latex Non-Intumescent Sealant:
1. SpecSeal LC-150
2. Nelson LBC
3. 3M Fire Dam 150
4. A/D Fire Barrier Seal N/S
5. Or other latex non-intumescent sealants by above listed manufacturers.

C. Firestop Putty:
1. SpecSeal Firestop Putty
2. Nelson FSP
3. Metacaulk Fire Rated Putty
4. 3M Fire Barrier Moldable Putty+
5. Tremstop - FP
6. Or other firestop putty by above listed manufacturers.

D. Wrap Strip:
1. SpecSeal SSWRED
2. Nelson WRS
3. Metacaulk Wrap Strip
4. 3M Fire Barrier FS-195+
5. Tremstop - WS
6. Or other wrap strip by above listed manufacturers.

E. Mortar:
1. SpecSeal Firestop Mortar
2. Nelson CMP
3. Hilti Firestop Mortar
4. Metacaulk Fire Rated Mortar
5. 3M Fire Barrier Mortar
6. Tremstop - WBM
7. Or other mortar by above listed manufacturers.

F. Silicone Elastomeric Sealant:
1. Pensil 300
2. 3M Fire Barrier 2000+
3. Metacaulk 835+
4. A/D Fire Barrier Silicone N/S
5. Or other silicone elastomeric sealants by above listed manufacturers.

2.4 SEALANT MATERIALS FOR USE IN SMOKE PARTITIONS AND WALL JOINTS

A. Silicone Elastomeric Sealant:
1. Hilti CP601S
2. 3M Fire Barrier 2000+
3. Metacaulk 835+
4. Or other silicone elastomeric sealants by above listed manufacturers.

2.5 FIRESAFING MATERIALS

A. Mineral Fiber Insulation: Density 3.5 lb/cu. ft. (min); compressible to 50% (min):
1. USG Thermafiber.
2. Rockwool.

2.6 ACCESSORIES

A. Primer: Type recommended by sealant manufacturer for specific substrate surfaces.

B. Installation Accessories: Metal clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place. Schedule 40 pipe sleeve required at all openings larger than 8 inches in diameter.

PART 3 EXECUTION

3.1 INSPECTION

A. Verify that environmental conditions are safe and suitable for installation of firestop products.

B. Verify that all pipe, conduit, cable and other items which penetrate smoke partitions have been permanently installed prior to installation of firestops.

C. Examine surfaces for conditions which would adversely affect execution, permanence and quality of work.

D. If unsatisfactory conditions for installation exist, notify the Construction Manager.

3.2 INSTALLATION

A. Surface Preparation: Remove all dust, dirt, oil and other foreign materials and contaminates from the application surfaces.

B. Coordinate with CCSD Inspection Services Department for the annular space inspection required by paragraph 1.7 B.

C. Apply firestops in accordance with the fire test reports, fire resistance requirements and manufacturer's recommendations.

D. Schedule and sequence the work to assure partitions, ceilings, and other construction which would conceal penetrations are not erected prior to the installation of firestops.

E. Unless specified and approved, all insulation used in conjunction with through-penetrants shall remain intact and undamaged and may not be removed.

F. Damming Construction: When required to properly contain firestopping materials within openings, damming or parking materials may be utilized. Remove all damming material after material has cured unless damming is a component of the listed system.

G. Inspect areas to assure that all openings have been completely sealed. Perform all remedial sealing necessary to assure complete closure of all openings, per the UL listed assemblies.

H. Finish visible surfaces flush and smooth as per details from the UL Fire Resistance Directory.

3.3 CLEANING

A. Clean Work under provisions of Division 01.

B. Clean adjacent surfaces of firestopping materials.

3.4 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Division 01.

B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 07 90 00

JOINT PROTECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Preparing substrate surfaces.

B. Sealant and joint backing.

C. Sealant at all dissimilar materials.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete: Sealants required in conjunction with concrete.

B. Section 08 11 13 – Hollow Metal Doors and Frames

C. Section 08 14 00 - Wood Doors.

D. Section 09 65 13 – Resilient Base and Accessories

E. Section 09 65 19 – Resilient Tile Flooring

1.3 REFERENCES

A. ASTM C790 - Use of Latex Sealing Compounds.

B. ASTM C804 - Use of Solvent-Release Type Sealants.

C. ASTM C834 - Latex Sealing Compounds.

D. ASTM C920 - Elastomeric Joint Sealants.

E. ANSI/ASTM D1056 - Flexible Cellular Materials - Sponge or Expanded Rubber.

F. ANSI/ASTM D1565 - Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open-Cell Foam).

G. SWRI (Sealant, Waterproofing and Restoration Institute)- Sealant and Caulking Guide Specification.

1.4 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, precautions for protection of adjacent materials, perimeter conditions requiring special attention, and environmental conditions required for installation.

D. Digital Submittal: Submit one (1) CD containing a digital copy of product data and Manufacturer's Installation Instructions submitted in hard copy format.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with SWRI requirements for materials and installation.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.

B. Applicator: Company specializing in performing the work of this section with minimum three years documented experience.

1.7 COORDINATION

A. Coordinate work under provisions of Section 01 31 13.

B. Coordinate the work with the sections referencing this section.

PART 2 PRODUCTS

2.1 SEALANTS

A. Acrylic Emulsion Latex: ASTM C834, single component; non-sag; color to match adjacent surfaces.

B. Butyl Sealant: ASTM C920, Class A, single component, solvent release, non-skinning, non-sagging, black color.
1. Elongation Capability: 7 to 10 percent
2. Service Temperature Range: -13 to 180 degrees F
3. Shore A Hardness Range: 10 to 30

C. Polysulfide Sealant: ASTM C920, Class A, two component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging, self-leveling type; grey color; paintable.
1. Elongation Capability: 25 percent
2. Service Temperature Range: -40 to 180 degrees F
3. Shore A Hardness Range: 20 to 35

D. Polyurethane Sealant: ASTM C920, Class A, single component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging type; color to match adjacent surfaces.
1. Elongation Capability: 25 percent
2. Service Temperature Range: -40 to 180 degrees F
3. Shore A Hardness Range: 20 to 35

E. Silicone Sealant: ASTM C920, low modulus type, Class A, single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding; color to match adjacent surfaces.
1. Elongation Capability: 25 percent
2. Service Temperature Range: -65 to 180 degrees F
3. Shore A Hardness Range: 15 to 35

2.2 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suite application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suite application.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Verify that substrate surfaces and joint openings are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

### 3.2 PREPARATION

A. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with ASTM C804 for solvent release and ASTM C790 for latex base sealants.

D. Protect elements surrounding the work of this Section from damage or disfiguration.

### 3.3 INSTALLATION

A. Perform installation in accordance with ASTM C804 for solvent release and ASTM C790 for latex base sealants.

B. Install other sealants in accordance with manufacturer's instructions.

C. Measure joint dimensions and size materials to achieve required width/depth ratios.

D. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.

E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

### 3.4 CLEANING AND REPAIRING

A. Clean work under provisions of Division 01.

B. Clean adjacent soiled surfaces.

C. Repair or replace finishes defaced by Work of this Section.

### 3.5 PROTECTION OF FINISHED WORK

A. Protect finished installation under provisions of Division 01.

B. Protect sealants until cured.

3.6 SCHEDULE

| | Location | Type |
|---|---|---|
| A. | Door Frame/Walls | Acrylic Emulsion Latex |
| B. | Under Thresholds | Butyl |
| C. | VCT | Type recommended by Manufacturer |

END OF SECTION

SECTION 08 11 13

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SCOPE

A. Furnish hollow metal work as shown in the contract drawings and as specified in this section.

1.2 WORK INCLUDED

A. Hollow metal doors and frames.

1.3 RELATED SECTIONS

A. Division 01 - General Requirements

B. Section 08 14 00 - Wood Doors.

C. Section 08 71 00 - Door Hardware.

E. Section 09 90 00 - Painting and Coating: Field painting of doors and frames.

1.4 REFERENCES

A. ASTM E152 - Methods of Fire Tests of Door Assemblies.

B. ASTM A 366-72 - Specification for steel, carbon, cold-rolled sheet, commercial quality.

C. ASTM A 526-80 - Specification for steel sheet, zinc-coated (galvanized) by the hot-dip process, commercial quality.

D. ASTM A 569-72 - Specification for steel, carbon, hot-rolled sheet and strip, commercial quality.

E. HMMA 802-87 - Manufacturing of hollow metal doors and frames.

F. HMMA 810-87 - Hollow metal doors.

G. HMMA 820-87 - Hollow metal frames.

H. HMMA 830-87 - Hardware preparation and locations for hollow metal doors and frames.

I. HMMA 840-87 - Installation and storage of hollow metal doors and frames.

J. NFPA 80 - Standard for Fire Doors.

K. SDI-122-90 - Installation for Standard Steel Doors and Frames.

1.5 QUALITY ASSURANCE

A. Doors and frames shall conform to the requirements of NAAMM and ANSI A250.8.

B. Provide doors and frames from a single manufacturer.

C. Fire-Rated Door Assemblies: Assemblies shall comply with NFPA 80.

1.6 SUBMITTALS

A. Submit shop drawings and product data under provisions of Sections 01 33 00 and 01 34 00. These drawings shall fully describe and locate all items being furnished and shall include large scale details of principal construction features. No work shall be fabricated until shop drawings for that work have been approved by the architect.

B. Shop drawings shall indicate frame configuration, anchor types, locations of cutouts for hardware, reinforcement for hardware, door elevations, internal reinforcement and cutouts for glazing and louvers.

C. Door Schedule: Use same reference designations indicated on Drawings in preparing schedule for doors and frames.

D. Certification: Submit certification that fire-rated doors comply with NFPA 80 and shall be listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-rating indicated, based on requirements of IBC 2006, Section 715.

E. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.7 DELIVERY, STORAGE AND PROTECTION

A. Protect products under provisions of Section 01 60 00 and of HMMA 840.

B. Protect doors and frames with resilient packaging sealed with cardboard and heat shrunk plastic during transit and job storage.

C. Break seal on-site to permit ventilation.

D. Store doors and frames at building site under cover. Place units on minimum 4-inch high wood blocking. If door packaging becomes wet, remove cartons immediately. Provide spacers between stacked doors to avoid metal to metal contact and to permit air circulation.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS (Members of HMMA)

A. Steelcraft.

B. Republic Steel Products.

C. Rocky Mountain Metals.

D. Gateway Metal Products.

E. Deansteel.

F. Commercial Door.

G. Curries Co.

H. All Steel Doors, Ltd.

I. Wilco Hollow Metal.

J. Approved Equal

2.2 HOLLOW METAL DOORS

A. Materials:

1. Doors shall be made of commercial quality, level, cold rolled steel conforming to ASTM A 366 or hot-rolled, pickled and oiled steel conforming to ASTM A 569 and free of scale, pitting or surface defects.
2. Interior Doors: Face sheets shall be not less than 18 gauge.
3. Primer not required on wipe coat galvanized steel.

B. Design and Construction

1. All doors shall be of the types and sizes shown on approved shop drawings, and shall be fully welded seamless construction with no visible seams or joints on their faces or vertical edges. Minimum door thickness 1 3/4".

2. All doors shall be strong, rigid and neat in appearance, free from warpage or buckle. Corner bends shall be true and straight and of minimum radius for the gauge of metal used.

3. Face sheets shall be stiffened by continuous vertical formed steel sections spanning the full thickness of the interior space between door faces. These stiffeners shall be not less than 22 gauge, spaced not more than 6" apart and securely attached to face sheets by spot welds not more than 5" on center. Spaces between stiffeners shall be sound-deadened and insulated the full height of the door.

4. Door faces shall be joined at their vertical edges by a continuous weld extending the full height of the door. All such welds shall be ground, filled and dressed smooth to make them invisible and provide a smooth flush surface.

5. Faces: Full flush and embossed panel per door types shown in Drawings.

6. Top and bottom edges of all doors shall be closed with a continuous recessed steel channel not less than 16 gauge, extending the full width of the door and spot welded to both faces. Exterior doors shall have an additional flush closing channel at their top edges and, where required for attachment of weatherstripping, a flush closure also at their bottom edges. Openings shall be provided in the bottom closure of exterior doors to permit the escape of entrapped moisture.

7. Core Construction: One of the following manufacturer's standard core materials that produce a door complying with SDI Standards:
   a. Interior: Resin-impregnated Kraft/paper honeycomb.
   b. Exterior: Polyurethane or polystyrene (7.7 R-Value minimum).
   c. Fire-Rated: Core shall be allowed by UL 10C.

8. Edge profiles shall be provided on both vertical edges of doors as follows:
   Single-acting swing doors - Beveled 1/8" in 2".
   Double-acting swing doors - Rounded on 2-1/8" radius.

9. All hardware furnished by the hardware contractor for single-acting doors shall be designed for beveled edges as specified in subparagraph 6 above.

10. Hardware Reinforcements:
    a. Doors shall be mortised, reinforced, drilled and tapped at the factory for fully templated hardware only, in accord with the approved hardware schedule and templates provided by the hardware contractor. Where surface-mounted hardware is to be applied, doors shall have reinforcing plates only; all drilling and tapping shall be done by others.

b. Minimum gauges for hardware reinforcing plates shall be as follows:

| | |
|---|---|
| Hinge and pivot reinforcements - | 7 gauge |
| Reinforcements for lock face, flush bolts, concealed holders, concealed or surface-mounted closers - | 12 gauge |
| Reinforcements for all other surface-mounted hardware - | 16 gauge |

11. Glass Moldings and Stops:
    a. Where specified or scheduled, doors shall be provided with mitered, hollow metal moldings to secure glazing by others in accordance with glass opening sizes shown on approved shop drawings.
    b. Fixed moldings shall be securely welded to the door on the securing side.
    c. Loose stops shall be not less than 20 gauge rolled steel channel, with mitered corner joints, secured to the door opening by cadmium - or zinc-coated countersunk screws. Snap-on attachments will not be permitted.

12. Finish: All doors, frames, and stick components shall be cleaned and finished in accordance with ANSI A250.10, “Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames”. After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities. Doors shall then be chemically treated to insure maximum paint adhesion and shall be coated, on all exposed surfaces, with a rust-inhibitive primer which is fully cured before shipment.

13. Factory-finish all hollow metal door lite frames to match finished door frame color. See Drawings for color.

## 2.3 HOLLOW METAL PANELS

A. Hollow metal panels shall be made of the same materials and constructed and finished in the same way as specified for hollow metal doors.

## 2.4 HOLLOW METAL FRAMES

A. Materials

1. Interior Openings: Frames shall be either commercial grade cold-rolled steel conforming to ASTM A 366 or commercial grade hot-rolled and pickled steel conforming to ASTM A 569. Metal thickness shall be not less than 16 gauge for frames in openings 4'0" or less in width; not less than 14 gauge for frames in openings over 4'0" in width.

B. Design and Construction

1. All frames shall be welded units with integral trim, of the sizes and shapes shown on approved shop drawings. Knocked-down frames will not be accepted.

2. All finished work shall be strong and rigid, neat in appearance, square, true and free of defects, warp or buckle. Molded members shall be mitered, straight and of uniform profile throughout their lengths.

3. Jamb depths, trim, profile and backbends shall be as scheduled by the architect and shown on approved shop drawings.

4. Corner joints shall have all contact edges closed tight, with trim faces mitered and continuously welded.

5. Minimum depth of stops shall be 5/8".

6. When shipping limitations so dictate, frames for large openings shall be fabricated in sections designed for splicing in the field by general contractor.

7. Frames for multiple or special openings shall have mullion and/or rail members which are closed tubular shapes having no visible seams or joints. All joints between faces of abutting members shall be securely welded and finished smooth.

8. Hardware Reinforcements:

   a. Frames shall be mortised, reinforced, drilled and tapped at the factory templated mortised hardware only, in accord with approved hardware schedule and templates provided by the hardware contractor. Where surface-mounted hardware is to be applied, frames shall have reinforcing plates only; all drilling and tapping shall be done.

   b. Minimum thickness of hardware reinforcing plates shall be as follows:

| | |
|---|---|
| Hinge and pivot reinforcements - | 7 gauge, 1-1/4" x 10" min. size |
| Strike reinforcements - | 12 gauge |
| Flush bolt reinforcements - | 12 gauge |
| Closer reinforcements - | 12 gauge |
| Reinforcements for: | |
| Surface-mounted hardware - | 12 gauge |
| Hold-open arms - | 12 gauge |
| Surface panic devices - | 12 gauge |

9. Glass Moldings and Stops:

   a. Where specified or scheduled, frames shall be provided with mitered, hollow metal moldings to secure glazing by others in accordance with glass opening sizes shown on approved shop drawings.

   b. Loose stops shall be not less than 20 gauge rolled steel channel, with mitered corner joints, secured to the frame opening by cadmium - or zinc-coated countersunk screws. Snap-on attachments will not be permitted.

10. Floor Anchors:

    a. Floor anchors shall be securely welded inside each jamb, with two holes provided at each jamb for floor anchorage.

    b. Where so scheduled or specified, adjustable floor anchors, providing not less than 2" height adjustment, shall be provided.

    c. Minimum thickness of floor anchors shall be 14 gauge.

11. Jamb Anchorage:

    a. Frames for installation in stud partitions shall be provided with steel anchors of suitable design, not less than 18 gauge thickness, securely welded inside each jamb as follows:

| | |
|---|---|
| Frames up to 7'6" height - | 4 anchors |
| Frames 7'6" to 8'0" height - | 5 anchors |
| Frames over 8'0" height - | 5 anchors plus one additional for each 2' or fraction thereof over 8'0" |

b. Frames to be anchored to previously placed concrete or structural steel shall be provided with anchors of suitable design as shown on approved shop drawings. Fasteners for such anchors shall be provided.

12. Door frames for installation in concrete masonry unit wall openings more than 4'0" in width shall have an angle or channel stiffener factory welded into the head. Such stiffeners shall be not less than 12 gauge steel and not longer than the opening width, and shall not be used as lintels or load bearing members.

13. Dust cover boxes of not thinner than 26 gauge steel shall be provided at all hardware mortises on frames to be set in masonry or plaster partitions.

14. All frames shall be provided with a steel spreader temporarily attached to the feet of both jambs to serve as a brace during shipping and handling. The steel spreader is not to be used for installation purposes.

C. Finish: After fabrication, all tool marks and surface imperfections shall be removed, and exposed faces of all welded joints shall be dressed smooth. Frames shall then be chemically treated to insure maximum paint adhesion and shall be coated on all accessible surfaces with a rust-inhibitive primer which is fully cured before shipment.

2.5 HARDWARE LOCATIONS

A. Hinges top-5" from head of frame to top if hinge. Bottom-10" from bottom of frame to bottom of hinge. Intermediate-centered between top and bottom hinges.

B. Locksets: 38" to centerline of knob.

C. Deadlocks: 60" to centerline of cylinder.

D. Panic Hardware: 38" to 41" to centerline of crossbar.

E. Door Pulls: 42" to center of grip.

F. Pushplates: 48" to centerline of plate.

2.6 CLEARANCES AND TOLERANCES

A. Edge clearances shall be provided as follow:

| | |
|---|---|
| Between doors and frames, at head and jambs: | 1/8" |
| At door sills where no threshold is used: | 3/8" maximum |
| At door sills where threshold is used: | 3/4" maximum above finished floor |
| Between edges of pairs of doors: | 1/8" |

PART 3 EXECUTION

3.1 SITE STORAGE AND PROTECTION OF MATERIALS

A. The general contractor shall see that any scratches or disfigurement caused in shipping or handling are promptly cleaned and touched up with a rust inhibitive primer, and that materials are properly stored on planks or dunnage, in a dry location, and covered to protect them from damage.

B. Doors shall have the wrappings or coverings removed upon delivery at the building site and shall be stored in a vertical position, in a dry location, spaced by blocking to permit air circulation between them.

## 3.2 INSTALLATION

It shall be the responsibility of the general contractor to perform the following:

A. Prior to installation all frames must be checked and corrected for size, swing, squareness, alignment, twist and plumbness. Permissible installation tolerances shall not exceed the following:

| | |
|---|---|
| Squareness +/- 1/16": | Measured on a line, 90 degrees from one jamb, at the upper corner of the frame at the other jamb. |
| Alignment +/- 1/16": | Measured on jambs on a horizontal line parallel to the plane of the wall. |
| Twist +/- 1/16": | Measured at face corners of jambs on parallel lines perpendicular to the plane of the wall. |
| Plumbness +/- 1/16": | Measured on the jamb at the floor. |

B. For fire-rated doors, install within clearances according to NFPA 80.

C. Install doors and frames in accordance with HMMA 840 and SDI 122.

D. Proper door clearances must be maintained in accordance with 2.06 of these specifications, except for special conditions otherwise noted. Where necessary, metal hinge shims, furnished by the general contractor, are acceptable to maintain clearances.

E. Hardware must be applied in accordance with hardware manufacturer's templates and instructions.

F. Coordinate installation of hardware.

G. Field paint hollow metal doors and frames per the requirements of Section 09 90 00 - Painting and Coating, to colors shown on the Drawings.

END OF SECTION

SECTION 08 14 00

WOOD DOORS

PART 1 GENERAL

1.1 WORK INCLUDED

A. Pre-finished wood, wood doors, flush, fire rated and nonrated. Existing doors to be reused if applicable. If existing doors cannot be reused, notify the Architect and follow specifications accordingly for new wood doors.

1.2 RELATED WORK

A. Division 01 - General Requirements

B. Section 06 10 00 - Rough Carpentry.

C. Section 06 20 00 - Finish Carpentry.

D. Section 08 11 13 – Hollow Metal Doors and Frames

E. Section 08 71 00 - Door Hardware.

F. Section 09 90 00 - Painting and Coating: Pre-finished.

1.3 REFERENCES

A. ANSI/NWWDA I.S.1 - Industry Standard For Wood Flush Doors (Includes Standards I.S.1.1 through I.I.S.1.7).

B. ASTM E90 - Measurement of Airborne Sound Transmission Loss of Building Partitions.

C. AWI - Quality Standards of Architectural Woodwork Institute.

D. NFPA 80 - Standard for Fire Doors.

E. NFPA 252 - Standard Method of Fire Test for Door Assemblies.

F. Window and Door Manufacturer's Association (WDMA): WDMA 1.5.1A-04.

G. Include veneer grade, cut, species, piece match, face match, appearance of pairs, sets and transoms and aesthetic grade.

1.4 QUALITY ASSURANCE

A. Conform to requirements of AWI Quality Standard Section 1300 and 1400 Premium Grade. ANSI/NWWDA I.S.1.

B. Installed Doors and Panels: Conform to NFPA 80 for fire rated class indicated, including non-rated doors in smoke partitions as defined in IBC 2006, Section 715.

C. Forest Certification:
1. Provide doors made with wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship."
2. Provide doors made with cores from certified forests.
3. Provide doors made with veneers from certified forests.

4. Provide doors made with not less than 70 percent of wood products from certified

forests.

5. Provide doors made with all wood products from certified forests.

D. Manufacturer Qualifications: A qualified manufacturer that is certified for chain of custody by an FSC-accredited certification body.

E. Single Source Responsibility: Provide doors from a single source to ensure uniformity in quality of appearance, face veneer, finish and construction.

F. Coordination: Contractor shall be responsible for coordinating and obtaining necessary information from hardware and metal frame manufacturers. Door manufacturer shall be responsible for coordinating necessary information received by Contractor from hardware and metal frame manufacturers in order that doors shall be properly prepared to receive hinges and hardware. Contractor shall provide door supplier with approved frame schedule, hardware schedule, and hardware templates. Furnish to door supplier 60 days prior to desired delivery date of doors.

1.5 SUBMITTALS

A. Submit shop drawings and product data under provisions of Sections 01 33 00 and 01 34 00.

B. Indicate door elevations, stile and rail reinforcement, internal blocking for hardware attachment, size and kind of each door, construction, swing, label, undercut, hardware location and machining requirements. Include location and extent of hardware blocking, fire ratings, requirement for factory finish, glass cutouts and other pertinent data. Note any discrepancies between the drawings and door schedules, and the requirements of regulatory and testing agencies. Identify acoustical construction on shop drawings.

C. Submit samples under provisions of Section 01 34 00.

D. Submit one corner sample illustrating quality, construction and finish.

E. Submit manufacturer's installation instructions under provisions of Section 01 34 00.

F. Details of core, edge construction and trim for openings.

G. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.6 DELIVERY, STORAGE, AND PROTECTION

A. Protect products under provisions of Section 01 60 00.

B. Protect doors with resilient packaging, poly-wrap, non-shrinkwrap. Break seal on site to permit ventilation.

C. Package, deliver, and store doors in accordance with ANSI/NWWDA requirements and AWI Section 1300 and WDMA Standards.

1.7 WARRANTY

A. Warranty: Manufacturer’s standard form, signed by manufacturer, installer, and Contractor, in which manufacturer agrees to repair or replace doors that are defective in materials or workmanship.

1. Warranty shall also include removal of defective door, hanging, installation or hardware and finishing that may be required due to repair or replacement of defective doors.

2. Warranty shall be in effect during the following period of time from date of

Substantial Completion:
a. Solid-Core Interior Doors: Life of installation.
b. Hollow Core Interior Doors: 5 years.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions including temperature, humidity, and ventilation within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Inspect for damage prior to installation.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Algoma Hardwoods.

B. VT Industries.

C. Graham Manufacturing.

D. Buell Door Co.

E. Weyerhauser Company.

F. Oshkosh Architectural Door Co.

G. Or approved equal.

2.2 DOOR TYPES

A. Core: Expanded honeycomb made of corrugated fiberboard. Meet or exceed the requirements of NWWDA Industry Standards I.S.1 Series.
1. Flush Interior Doors: 1-3/4 inches thick; hollow core construction; wood veneer faces.

B. Construction: 5 plies.

2.3 DOOR CONSTRUCTION (AWI QUALITY STANDARD)

A. Solid, Non-Rated Core: AWI Section 1300, PC-Particleboard.
B. Solid, Special Function Core: Special Function): AWI Section 1300, Type SR - Sound Retardant (Acoustical).

C. AWI Premium Grade.

2.4 FLUSH DOOR FACING

A. Veneer Facing (Flush Interior Door): AWI premium grade white birch species wood, rotary cut with book matched grain, for transparent finish: Painting and Coating-09 90 00.

B. Color: Clear Stain.

2.5 ADHESIVES

A. Interior Doors: AWI, Type I. All glue lines.

2.6 FABRICATION

A. Fabricate doors in accordance with AWI Quality Standards and ANSI/NWWDA I.S.1 requirements.

B. Fabricate doors located in smoke partitions as indicated on Drawings to have undercuts not in excess of the bottom of door clearances permitted in NFPA 80.

C. Provide flush doors with minimum 1-3/8 inch thick edge strips with a hard wood species to match face veneer.

D. Factory machine doors for finish hardware to comply with NFPA 80. Internal blocking 5" at top rail, 5" x 18" lock block on lock stile of mineral core doors. Lock block two sides if panic devices are used.

E. Stiles, rails and core banded together and sanded.

F. Prehanging: All doors shall be prehung.
1. Prehang doors at factory in accordance with tolerance requirements of the NWMA Standards with allowances for specific undercuts as indicated on the door schedule.
2. Provide standard bevel or radius to edge of door as required for the installation.
3. Butt Hinges: Comply with Section 08 71 00.
4. Hinge doors with clearance of not more than 3/32 inch at each side, and head; clearance at bottom 1/2 inch or as required for threshold.
5. Mortise, drill or otherwise work doors for finish hardware as scheduled, beveling lock edge to allow for proper clearance in opening and closing doors.

G. Factory-finish all door lite frames to match finished door frame color.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine doors and frames before hanging.
1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
2. Reject doors with defects.

3.2 INSTALLATION

A. Install doors in accordance with manufacturer's instructions and referenced Quality Standard.

B. Machine cut relief for hinges and closers and coring for handsets and cylinders.

C. Trim door width by cutting equally on both jamb edges.

D. Trim door height by cutting equally on top and bottom edges to a maximum of 3/4 inch.

E. Pilot drill screw and bolt holes. Use threaded through bolts for half surface hinges.

F. Prepare doors to receive finish hardware in accordance with AWI requirements.

G. Conform to AWI requirements for fit tolerances.

H. Coordinate installation of glass and glazing.

I. Prehung door and frame units shall be hung true and plumb with standard bevel and with uniform 3/32 inch clearance at jambs and head, and 1/2 inch bottom clearance, unless otherwise required. Mortise, drill or otherwise prepare doors for finish hardware specified in Section 08 71 00 - Finish Hardware.

J. Doors that are cut or planed for fitting shall be immediately resealed with a transparent wood sealer. Doors shall operate freely without sticking or binding, without hinge-bound conditions and with hardware installed, properly adjusted and functioning.

3.3 INSTALLATION TOLERANCES

A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.4 ADJUSTING AND CLEANING

A. Adjust for smooth and balanced door movement. Rehang or replace doors that do not swing or operate freely.

B. During the course of work and on completion of work, remove and dispose of excess materials, equipment and debris.

END OF SECTION

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Door Hardware

B. Related Sections:

1. Section 06 20 00 – Finish Carpentry
2. Section 07 90 00 – Joint Sealers
3. Section 08 11 13 – Hollow Metal Doors and Framing
4. Section 08 14 00 – Wood Doors

C. Specific Omissions: Hardware for the following is specified or indicated elsewhere.

1. Windows.
2. Cabinets, including open wall shelving and locks.
3. Signs, except where scheduled.
4. Toilet accessories, including grab bars.
5. Installation.
6. Rough hardware.
7. Conduit, junction boxes & wiring.
8. Access doors and panels.
9. Corner Guards.

1.2 REFERENCES:

Use date of standard in effect as of Bid date.

A. American National Standards Institute – ANSI 156.18 – Materials and Finishes.

B. ICC/ANSI A117.1 - 1998 – Specifications for making buildings and facilities usable by physically handicapped people.

C. ADA – Department of Justice – ADA Standards for Accessible Design (28 CFR Part 36)

D. BHMA – Builders Hardware Manufacturers Association

E. DHI – Door and Hardware Institute

F. NFPA – National Fire Protection Association

1. NFPA 80 – Fire Doors and Windows
2. NFPA 105 – Smoke and Draft Control Door Assemblies
3. NFPA 252 – Fire Tests of Door Assemblies

G. UL – Underwriters Laboratories

1. UL10C – Positive Pressure Fire Tests of Door Assemblies.
2. UL 305 – Panic Hardware

H. WHI – Warnock Hersey Incorporated

I. Local applicable codes

J. SDI – Steel Door Institute

K. AWS – Architectural Woodwork Standards

L. NAAMM – National Association of Architectural Metal Manufacturers

M. IBC - International Building Code (Use current standard in effect).

N. UFAS – Uniform Federal Accessibilities Standards

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.

1. Sample Size: Full-size units or minimum 2-by-4-inch. Samples for sheet and 4-inch long Samples for other products.

a. Full-size Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

C. Other Action Submittals:

1. Door Hardware Schedule: Prepared by or under the supervision of Hardware Supplier, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

a. Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
b. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
c. Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.
d. Content: Include the following information:

1) Identification number, location, hand, fire rating, size, and material of each door and frame.
2) Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
3) Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
4) Description of electrified door hardware sequences of operation and interfaces with other building control systems.
5) Fastenings and other pertinent information.
6) Explanation of abbreviations, symbols, and codes contained in schedule.
7) Mounting locations for door hardware.
8) List of related door devices specified in other Sections for each door and frame.

2. Keying Schedule: Prepared by or under the supervision of Hardware Supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

D. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Hardware Supplier.

B. Product Certificates: For electrified door hardware, from the manufacturer.

1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

C. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

D. Warranty: Special warranty specified in this Section.

E. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.

B. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.5 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Door Hardware: 10% of each lock, latch door closer and exit device, not to be less than two of each type and function.
2. Electrical Parts: 10% of each type of electric hardware, not to be less than two or each type and function.

B. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant or person of equivalent experience who is insured against errors, omissions and liability in an amount not less than $1,000,000.00 who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

1. Warehousing Facilities: Within 50 miles of project.
2. Scheduling Responsibility: Preparation of door hardware and keying schedules.

3. Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as follows:

1. For door hardware, an Architectural Hardware Consultant (AHC).

C. Source Limitations: Obtain each type of door hardware from a single manufacturer.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform after-market electrical modifications are not acceptable.

D. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

E. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. at the tested pressure differential of 0.3-inch wg of water.

F. Means of Egress Doors: Latches do not require more than 15 lbf to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

G. Accessibility Requirements: For door hardware on doors in an accessible route, comply with ICC/ANSI A117.1.

1. Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 5 lbf .
2. Comply with the following maximum opening-force requirements:

   a. Interior, Non-Fire-Rated Hinged Doors: 5 lbf applied perpendicular to door.
   b. Sliding or Folding Doors: 5 lbf applied parallel to door at latch.
   c. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.

3. Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 1/2 inch high.
4. Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.

H. Keying Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination." In addition to Owner**,** Construction Manager**,** Contractor, and Architect, conference participants shall also include Installer's Architectural Hardware Consultant and Owner's security consultant. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
2. Preliminary key system schematic diagram.
3. Requirements for key control system.
4. Requirements for access control.

5. Address for delivery of keys.

I. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.

B. Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.

C. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

D. Deliver keys and permanent cores to Owner by registered mail or overnight package service.

1.8 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 03.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

C. Security: Coordinate installation of door hardware, keying, and access control with Owner's security consultant.

D. Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.

E. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Structural failures including excessive deflection, cracking, or breakage.
b. Faulty operation of doors and door hardware.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.

a. Electromagnetic and Delayed-Egress Locks: Life of the building from date of Substantial Completion.
b. Exit Devices: Five years from date of Substantial Completion.
c. Manual Closers: Ten years from date of Substantial Completion.

d. Concealed Floor Closers: Ten years from date of Substantial Completion.

1.10 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Provide parts and supplies that are the same as those used in the manufacture and installation of original products.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. Provide door hardware for each door as scheduled in Part 3 "Door Hardware Schedule" Article to comply with requirements in this Section.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturers' products.
2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.

B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in Part 3 "Door Hardware Schedule" Article. Products are identified by using door hardware designations, as follows:

1. Named Manufacturers' Products: Manufacturer and product designation are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in Part 3 "Door Hardware Schedule" Article.
2. References to BHMA Designations: Provide products complying with these designations and requirements for description, quality, and function.

2.2 HINGES

A. Hinges: BHMA A156.1. Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
   a. Ives; an Ingersoll Rand Company
   b. McKinney Products Company; an ASSA ABLOY Group company.

2.3 CONTINUOUS HINGES

A. Continuous Hinges: BHMA A156.26; minimum 0.120-inch thick, hinge leaves with minimum overall width of 4 inches; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

B. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

    a. Ives, an Ingersoll Rand Company.
    b. Pemko Manufacturing, an ASSA ABLOY Group company.
    c. Approved Equal

## 2.4 MECHANICAL LOCKS AND LATCHES

A. Lock Functions: As indicated in door hardware schedule.

B. Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

1. Mortise Locks: Minimum 3/4-inch latchbolt throw.
2. Deadbolts: Minimum 1-inch bolt throw.

C. Lock Backset: 2-3/4 inches, unless otherwise indicated.

D. Lock Trim:

1. Description: As listed in hardware schedule.
2. Levers: Cast.
3. Escutcheons (Roses): Wrought.
4. Dummy Trim: Match lever lock trim and escutcheons.
5. Operating Device: Lever with escutcheons (roses).

E. Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
4. Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.
5. On pairs of doors with overlapping astragals, provide short lip strike to allow installation without cutting or modifying astragal.

F. Mortise Locks: BHMA A156.13; Operational and Security Grade 1; stamped steel case with steel or brass parts; Series 1000.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
    a. Dexter; an Ingersoll Rand Company
    b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
    c. Yale Security Inc.; an ASSA ABLOY Group company.

## 2.5 SURFACE BOLTS

A. Surface Bolts: BHMA A156.16.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

    a. Ives; an Ingersoll Rand Company
    b. Rockwood Manufacturing Company.

2.6 EXIT DEVICES AND AUXILIARY ITEMS

A. Exit Devices and Auxiliary Items: BHMA A156.3.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

    a. Falcon; an Ingersoll Rand Company
    b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
    c. Yale Security Inc.; an ASSA ABLOY Group company.

2.7 LOCK CYLINDERS

A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.

1. Manufacturer: Same manufacturer as for locking devices.
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
3. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
    a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
    b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
    c. Yale Security Inc.; an ASSA ABLOY Group company.

B. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

C. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.8 KEYING

A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
1. Master Key System: Change keys and a master key operate cylinders.
2. Grand Master Key System: Change keys, a master key, and a grand master key operate cylinders.

B. Keys: Nickel silver.

1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:

    a. Notation: "DO NOT DUPLICATE."

2. Quantity: In addition to one extra key blank for each lock, provide the following:

    a. Cylinder Change Keys: Three.
    b. Master Keys: Five.
    c. Grand Master Keys: Five.

2.9 KEY CONTROL SYSTEM

A. Key Control Cabinet: BHMA A156.5; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 110 percent of the number of locks.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

a. American Key Boxes and Cabinets.
b. HPC, Inc.
c. Lund Equipment Co., Inc.

3. Multiple-Drawer Cabinet: Cabinet with drawers equipped with key-holding panels and key envelope storage, and progressive-type ball-bearing suspension slides. Include single cylinder lock to lock all drawers.
4. Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.
5. Portable Cabinet: Tray for mounting in file cabinet, equipped with key-holding panels, envelopes, and cross-index system.

B. Key Lock Boxes: Designed for storage of two keys.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:

a. GE Security, Inc.
b. HPC, Inc.
c. Knox Company.

C. Key Control System Software: BHMA A156.5, Grade 1; multiple-index system for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated in Specification or comparable product by one of the following:
   a. Corbin Russwin Architectural Hardware; an ASSA ABLOY Group company.
   b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
   c. Yale Security Inc.; an ASSA ABLOY Group company.

2.10 OPERATING TRIM

A. Operating Trim: BHMA A156.6; stainless steel, unless otherwise indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

a. McKinney Hinges, an ASSA ABLOY Group company
b. Rockwood Manufacturing Company.

2.11 SURFACE CLOSERS

A. Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following]:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

a. LCN; an Ingersoll Rand Company.
b. Norton Door Controls; an ASSA ABLOY Group company.
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
d. Yale Security Inc.; an ASSA ABLOY Group company.

2.12 MECHANICAL STOPS AND HOLDERS

A. Wall- and Floor-Mounted Stops: BHMA A156.16; brass bronze or stainless steel as specified.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

a. Ives; an Ingersoll Rand Company
b. Rockwood Manufacturing Company.

2.13 OVERHEAD STOPS AND HOLDERS

A. Overhead Stops and Holders: BHMA A156.8.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

a. Ives; an Ingersoll Rand Company
b. Rockwood Manufacturing Company.
c. SARGENT Manufacturing Company; an ASSA ABLOY Group company.

2.14 DOOR GASKETING

A. Door Gasketing: BHMA A156.22; air leakage not to exceed 0.50 cfm per foot of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.

1. Manufacturers: Subject to compliance with requirements**,** provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

a. McKinney Products Company; an ASSA ABLOY Group company.
b. Pemko Manufacturing, an ASSA ABLOY Group company.

2.15 THRESHOLDS

A. Thresholds: BHMA A156.21; fabricated to full width of opening indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings and schedule or comparable product by one of the following:

a. McKinney Products Company; an ASSA ABLOY Group company.
b. Pemko Manufacturing, an ASSA ABLOY Group company.

2.16 SLIDING DOOR HARDWARE

A. Sliding Door Hardware: BHMA A156.14; consisting of complete sets including rails, hangers, supports, bumpers, floor guides, and accessories indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:

a. McKinney Products Company; an ASSA ABLOY Group company.
b. Pemko Manufacturing, an ASSA ABLOY Group company.

2.17 AUXILIARY ELECTRIFIED DOOR HARDWARE

A. Auxiliary Electrified Door Hardware:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on schedule or comparable product by one of the following:
a. HES, an ASSA ABLOY Group company
b. SARGENT Manufacturing Company; an ASSA ABLOY Group company.
c. Securitron Magnalock Corporation; an ASSA ABLOY Group company.

2.18 FABRICATION

A. Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Architect.

1. Manufacturer's identification is permitted on rim of lock cylinders only.

B. Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.

C. Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.

1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
2. Fire-Rated Applications:

    a. Wood or Machine Screws: For the following:

        1) Hinges mortised to doors or frames**;** use threaded-to-the-head wood screws for wood doors and frames.
        2) Strike plates to frames.
        3) Closers to doors and frames.

    b. Steel Through Bolts: For the following unless door blocking is provided:

        1) Surface hinges to doors.
        2) Closers to doors and frames.
        3) Surface-mounted exit devices.

3. Spacers or Sex Bolts: For through bolting of hollow-metal doors.
4. Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
5. Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

2.19 FINISHES

A. Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

D. All locksets, exit devices and push pull trim shall be finished with SARGuard™ or Microshield™, an FDA recognized antimicrobial coating with built in protection to prevent the growth of a broad range of bacteria, mold, and mildew.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

3.3 INSTALLATION

A. Mounting Heights: Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

C. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 30 inches of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.

D. Lock Cylinders: Install construction cores to secure building and areas during construction period.

1. Replace construction cores with permanent cores as directed by Owner.
2. Furnish permanent cores to Owner for installation.

E. Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.

F. Boxed Power Supplies: Locate power supplies as indicated. Verify location with Architect.

1. Configuration: Provide least number of power supplies required to adequately serve doors with electrified door hardware.

G. Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

H. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.

I. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

J. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

K. Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.

3.4 FIELD QUALITY CONTROL

A. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

1. Independent Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
3. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.7 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes. Refer to Division 01 Section "Demonstration and Training."

3.8 DOOR HARDWARE SCHEDULE

**HW SET: 01**
Door Number: 7-03, 16A-03, 16B-03

Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 1 | EA | ENTRY LOCK | J54 x DOV x SCH C Keyway | 626 | DEX |
| | | Reuse Balance of Existing Hardware | | | |

**HW SET: 02**
Door Number: 7-07, 16A-13, 16B-13

Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 1 | EA | PRIVACY LOCK | J40 x DOV | 626 | DEX |
| | | Reuse Balance of Existing Hardware | | | |

**HW SET: 03**
Door Number: 7-01, 7-02, 7-04, 7-05, 7-08, 7-09, 7-11, 16A-01, 16A-02, 16A-04, 16A-06, 16A-08, 16A-10, 16A-12, 16A-14, 16B-01, 16B-02, 16B-04, 16B-06, 16B-08, 16B-10, 16B-12, 16B-14

Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 1 | EA | PASSAGE LOCK | J10 x DOV | 626 | DEX |

Reuse Balance of Existing Hardware

**HW SET: 04**
Door Number: 7-06, 7-10, 16A-05, 16A-07, 16A-09, 16A-11, 16B-05, 16B-07, 16B-09, 16B-11

Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 1 | EA | SLIDING DOOR HDWE | 9614 Series Set | 628 | HAGER |

**HW SET: 05**
Door Number: 101A
Each to have:
ALUMINUM STOREFRONT –NO CHANGE IN HARDWARE
Have aluminum storefront company adjust floor closer

**HW SET: 06**
Door Number: 108B
Each to have:
REMOVE EXISTING DEADBOLT –FILL, PATCH, BONDO, and REPAINT DOOR
REUSE BALANCE OF EXISTING HARDWARE

**HW SET: 07**
Door Number: 106B, 107A, 112A

Each to have:
EXISTING DOOR, FRAME, AND HARDWARE TO REMAIN

**HW SET: 08**
Door Number: 103A
Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 1 | EA | STOREROOM LOCK | W581CP6D DANE | 626 | FALCON |

Reuse Balance of Existing Hardware

**HW SET: 09**
Door Number: 104A
Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 3 | EA | HINGE | 5PB 4.5 x 4.5 | 626 | IVES |
| 1 | EA | STOREROOM LOCK | W581CP6 DANE | 626 | FALCON |

Reuse Balance of Existing Hardware

**HW SET: 10**
Door Number: 102A,105A, 106A, 108A
Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 1 | EA | OFFICE LOCK | W511CP6D DANE | 626 | FALCON |

Reuse Balance of Existing Hardware

**HW SET: 11**
Door Number: 110A,
Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 3 | EA | HINGE | 5PB 4.5 x 4.5 | 626 | IVES |
| 1 | EA | PRIVACY LOCK | W301 DANE | 626 | FALCON |
| 1 | EA | KICKPLATE | 8400 10" X 2" LDW | 630 | IVES |
| 1 | EA | WALL STOP | WS406CCV | 630 | IVES |

Reuse Balance of Existing Hardware

**HW SET: 12**

Door Number: 111A

Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 1 | EA | PRIVACY LOCK | W301 DANE | 626 | FALCON |
| 1 | EA | WALL STOP | WS406CCV | 630 | IVES |

Reuse Balance of Existing Hardware

**HW SET: 13**

Door Number: 102B

Each to have:

| | | | | | |
|---|---|---|---|---|---|
| 3 | EA | HINGE | 5BB 4.5 x 4.5 | 626 | IVES |
| 1 | EA | OFFICE LOCK | W511CP6D DANE | 626 | FALCON |
| 1 | EA | KICKPLATE | 8400 10" X 2" LDW | 630 | IVES |

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 WORK INCLUDED

A. Wood stud framing.

B. Gypsum board.

C. Gypsum sheathing board.

D. Taped and sanded joint treatment.

E. Gypsum Board Primer Coat Treatment.

F. Textured finish.

1.2 WORK INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

A. Section 10 28 00 - Toilet, Bath and Laundry Accessories: Grab bar supports and frames for recessed accessories.

1.3 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 06 10 00 - Rough Carpentry.

C. Section 06 20 00 - Finish Carpentry.

D. Section 08 11 13 – Hollow Metal Doors and Frames

E. Section 08 14 00 - Wood Doors.

F. Section 09 65 00 - Resilient Flooring.

G. Section 09 90 00 - Painting and Coating.

1.4 REFERENCES

A. ASTM C36 - Gypsum Wallboard.

B. ASTM C79 - Gypsum Sheathing Board.

C. ASTM C442 - Standard Specification for Gypsum Backing Board and Coreboard.

D. ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.

E. ASTM C630 - Water Resistant Gypsum Backing Board.

F. ASTM C645 - Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.

G. ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.

H. ASTM C931 - Exterior Gypsum Soffit Board.

I. ASTM C1002 - Steel Drilled Screws for the Application of Gypsum Board.

J. ASTM C1178 - Glass Mat Water Resistant Gypsum Backing Panel.

K. ASTM C1278 – Fiber-Reinforced Gypsum Panels.

L. ASTM E90 - Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

M. ASTM E119 - Fire Tests of Building Construction and Materials.

N. GA-201 - Gypsum Board for Walls and Ceilings.

O. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

P. GA-252 - Fire Resistant Gypsum Sheathing.

Q. GA-600 - Fire Resistance Design Manual.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with GA-201, GA-216, GA-252, and GA-600 as published by The Gypsum Association.

B. Applicator: Company specializing in gypsum board systems work with five (5) years documented experience and approved by manufacturer.

C. Fire Test Response Characteristics: Provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.

1.6 REGULATORY REQUIREMENTS

A. Conform to 2009 International Building Code, Section 508.2.5.1 as follows:
   1. Smoke Resisting Partitions: Penetrations to be per UL Design Nos. WL1062, WL1126 and WL3132 for conditions shown on Drawings or approved equivalent systems meeting the requirements of Section 07 84 00 - Firestopping.

1.7 SUBMITTALS

A. Submit shop drawings and product data under provisions of Sections 01 33 00 and 01 34 00.

B. Indicate on shop drawings, special details associated with acoustic insulation and furring, abuse resistant installations, and joints at top of walls. Indicate on shop drawings the out-of-plane tolerance to be adhered to for the finished surface of gypsum board walls.

C. Provide product data on metal framing, gypsum product, joint, finish and accessories indicated.

D. Provide two (2) samples, 8” x 8”, of each textured finish indicated and on same backing indicated for work.

E. Provide two (2) samples, 12” long, for each trim accessory indicated.

F. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original packages, containers, or bundles bearing brand name and identification of manufacturer or supplier.

B. Store materials inside under cover and keep them dry and protected against damage from weather, direct sunlight, surface contamination, corrosion, construction traffic, and other causes. Stack gypsum panels flat to prevent sagging.

C. Handle gypsum board to prevent damage to edges, ends, and surfaces. Do not bend or damage metal corner beads and trim.

1.9 PROJECT CONDITIONS

A. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.

B. Do not install interior products until installation areas are enclosed and conditioned.

C. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
   1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - GYPSUM BOARD SYSTEM

A. Domtar Gypsum.

B. Georgia Pacific.

C. Gold Bond Building Products Division.

D. James Hardie Gypsum.

E. Louisiana Pacific.

F. National Gypsum Co.

G. Pabco.

H. United States Gypsum Co.

I. American Gypsum Co.

J. Or approved equal.

2.2 FRAMING MATERIALS

A. Wood stud framing as specified on drawings.

B Furring, Ceiling, Framing and Accessories: As specified in Section 09 22 03.

C. Fasteners: ASTM C1002; GA 216.

D. Glass Fiber Sheathing Tape: Self-adhering glass fiber tape of type recommended by sheathing and tape manufacturer.

2.3 GYPSUM BOARD MATERIALS

A. General: Provide panels in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.

B. Standard Gypsum Board: ASTM C36; 1/2 and 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

C. Fire Rated Gypsum Board: ASTM C36; fire resistive type, UL rated; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.

D. Moisture Resistant Gypsum Board: ASTM C630; 5/8 inch thick, Type X, maximum permissible length; ends square cut, tapered edges. Not for use on ceilings of toilet or shower rooms and is not acceptable as a tile substrate.

2.4 ACCESSORIES

A. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations, unless otherwise indicated.

B. Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board.

C. Corner Beads: Galvanized metal. Use at outside corners, unless otherwise indicated.

D. Edge Trim: GA 201 and GA 216; Type U exposed reveal bead.

E. Joint Materials: ASTM C475; GA 201 and GA 216; reinforcing tape, joint compound, adhesive and water.

F. Fasteners: ASTM C1002; Type S12 and GA 216. Use screws complying with ASTM C954 for fastening panels to steel members from 0.033 to 0.112 inch thick.

G. Control Joints: USG Control Joint No. 093.

H. Sound Attenuation Blankets: As specified in Section 07 21 16 - Blanket Insulation: Acoustical insulation.

I. Gypsum Board Primer: USG, Sheetrock First Coat.

J. Textured Finish: Latex based material, job-mixed, aggregated, drying-type texture finish for spray application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on shop drawings.

B. Beginning of installation means acceptance of existing surfaces.

C. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.

3.2 WOOD FRAME INSTALLATION

A. General: In accordance with ASTM C840 and manufacturer's recommendation.

3.3 CEILING FRAMING INSTALLATION

A. Refer to Section 06 10 00 for all work associated with the framing and suspension of all gypsum board ceilings and soffits.

3.4 ACOUSTICAL ACCESSORIES INSTALLATION

A. Sound Attenuation Blankets: As specified in Section 07 21 16 - Blanket Insulation: Acoustical insulation.

B. Place acoustical insulation in all partitions shown on drawings to receive sound insulation tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions and tight to items penetrating partitions. Size batts for a friction fit and install in accordance with manufacturer's recommendations. Butt ends of batts closely together and fill all voids.

C. Install acoustical insulation batts above gypsum board ceilings and other locations as shown on Drawings, in strict accordance with manufacturer's instructions.

D. Install acoustical sealant at gypsum board perimeter of partitions shown on drawings to receive sound insulation. Install at side and bottom edges of partitions and at penetrations of partitions by conduit, pipe, ductwork, and rough-in boxes.

3.5 GYPSUM BOARD INSTALLATION

A. Install gypsum board in accordance with GA 201, GA 216, GA-600, and manufacturer's instructions. Do not install moisture-resistant gypsum board on any toilet or shower room ceiling.

B. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over framing members or stud blocking. No more than 1/16 inch of open space between panels.

C. Erect all types of single layer fire rated gypsum board vertically, with edges and ends occurring over framing members or stud blocking.

D. Install abuse-resistant gypsum board vertically with top of boards 8'-0" above floor. Ends and edges shall occur over framing members or stud blocking.

E. Erect exterior gypsum sheathing horizontally, with edges butted tight and ends occurring over framing members, blocking or other steel bearing members.

F. Use screws when fastening gypsum board. Space fasteners in gypsum panels according to referenced gypsum board application and finishing standard and manufacturer's written recommendations.
   1. Space screws a maximum of 12 inches o.c. for vertical applications.
   2. Space fasteners in panels that are tile substrates a maximum of 8 inches o.c.

G. Double Layer Applications: Secure second layer to first with adhesive and sufficient fasteners to hold in place. Fasten through first and second layer into framing members. Apply adhesive per manufacturer's instructions.

H. Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.

I. At furred walls above finished ceilings having rigid insulation, seal all around all penetrations through the gypsum board such as truss bracing, piping and conduit. Also seal the joint at the top of wall between the gypsum board and the roof deck.

J. Place control joints consistent with lines of building spaces and as shown on the drawings.

K. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.

L. Install glass mat faced gypsum tile backerboard on studs in accordance with manufacturer's instructions and TCA Handbook.

M. Hold gypsum board 1/4" maximum from top of slab and caulk the resulting joint.

N. Provide perimeter relief for gypsum surfaces where a partition or furred wall abuts a structural element. Apply appropriate edge trim to the face-layer perimeter and apply sealant to close the gap.

O. At partitions with RC-1 resilient channel applications, install a 3” wide strip of 1/2” thick gypsum board at the floor line to assure a solid base for attaching the gypsum board and the base. An additional strip of gypsum board or a resilient furring channel should be used at the ceiling line. The point of intersection between the wall and the floor shall be caulked prior to application of base. Fasten resilient furring channels through alternate flanges at each stud using 1-1/4” Type W drywall screws. Fasten both flanges at channel ends.

P. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C919 and with manufacturer’s written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

3.6 JOINT TREATMENT

A. At all unfinished gypsum board walls and furred surfaces above ceilings, or otherwise concealed from view, install tape embedded in one coat of joint compound with one additional coat of joint compound applied over all taped joints, corners, fastener heads, angles and other gypsum board accessories. Clean excess compound from joint. Sanding is not required at these areas.

B. At all gypsum board walls, ceilings and furred surfaces scheduled to receive paint, install tape embedded in one coat of joint compound and apply three additional coats of joint compound over all taped joints, corners, fastener heads, angles and other gypsum board accessories. Finish as required by the paint manufacturer’s installation instructions.

C. At all gypsum board walls and furred surfaces scheduled to receive ceramic tile, install tape embedded in one coat of joint compound with no finish coats at all joints and corners, and install one coat of joint compound at all fastener heads, angles and other gypsum board accessories, per the requirements of the Tile Council of America methods scheduled for application and the tile backerboard manufacturer.

D. Joint compound at all areas scheduled to receive finishes shall be sanded smooth and shall be free of tool marks and ridges.

E. Feather the final joint compound coat at areas scheduled for paint finish onto adjoining surfaces so that the camber is a maximum 1/32 inch.

3.7 TEXTURE FINISH

A. Apply Gypsum Board Primer prior to installing texture finishes materials in accordance with manufacturer’s instructions.

B. Spray-apply texture finish materials.

C. Provide finish to match existing on all gypsum board walls scheduled for paint finish. Mix and apply finish using powered spray equipment to produce a uniform texture matching approved samples, free of thin application or application patterns.

D. Provide finish to match existing on all ceilings and soffits scheduled for paint finish.

3.8 TOLERANCES

A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction. Surfaces of walls must not exceed this variation within 6'-0" of floor or work may be rejected.

3.9 FINISHES

A. Provide finish of gypsum board surfaces in accordance with the Gypsum Association "Recommended Specification: Levels of Gypsum Board Finish" as follows:
   1. Level 0 (Temporary Construction): No taping, finishing, or accessories required.
   2. Level 1 (Fire taping at plenum areas above ceiling, in attics, in areas where the assembly will be concealed or in building service corridors and other areas not normally open to public view):
      a. Joints and interior angles shall have tape embedded in joint compound.
      b. Surface shall be free of excess joint compound.
      c. Tool marks and ridges are acceptable.
   3. Level 2 (Water resistant gypsum backing for storage areas, or other similar area where surface appearance is not of primary concern):
      a. Joints and interior angles shall have tape embedded in joint compound and wiped with a joint knife leaving a thin coating joint compound over joints and interior angles.
      b. Fastener heads and accessories shall be covered with a coat of joint compound.
      c. Surface shall be free of excess joint compound.
      d. Tool marks and ridges are acceptable.
      e. Joint compound applied over the body of the tape at the time of tape embedment shall be considered a separate coat of joint compound and shall satisfy the conditions of this level.
   4. Level 3 (Appearance areas to receive heavy or medium texture (spray or hand applied) finishes before final painting, or where heavy grade wallcoverings are to be applied as final decoration. This level of finish is not to be used where smooth painted surface or light to medium wallcoverings are to be applied.): NOT USED.
   5. Level 4 (Appearance areas to receive flat paints, light texture, or where backed wallcoverings are to be applied. This level of finish is not to be used where gloss, semi-gloss and enamel paints are to be applied.):
      a. Joints and interior angles shall have tape embedded in joint compound and two (2) separate coats of joint compound applied over flat joints and one (1) separate coat of joint compound applied over interior angles.
      b. Fastener heads and accessories shall be covered with three (3) separate coats of joint compound.
      c. Joint compound shall be smooth and free of tool marks and ridges.
      d. Surface to be coated with drywall primer as specified herein prior to application of texture.
      e. Untextured surfaces to be coated with drywall primer prior to application of final finishes as specified in Section 09 90 00 - Painting and Coating.
   6. Level 5 (Appearance areas to receive gloss, semi-gloss, enamel, or nontextured flat paints or where severe lighting conditions occur):
      a. Joints and interior angles shall have tape embedded in joint compound and two (2) separate coats of joint compound applied over flat joints and one (1) separate coat applied over interior angles.
      b. Fastener heads and accessories shall be covered with three (3) separate coats of joint compound.

c. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface to fill imperfections in the joint work, smooth the paper texture and provide a uniform surface for decorating. Excess compound shall be immediately sheared off, leaving a film of skim coating compound completely covering the paper.
d. The surface shall be smooth and free of tool marks and ridges.
e. Surface to be coated with drywall primer as specified herein prior to application of texture.
f. Untextured surfaces to be coated with drywall primer prior to final finishes as specified in Section 09 90 00 - Painting and Coating.

B. Verify locations of each “finish level” with Architect prior to commencing finishing and texturing.

C. Painted surfaces as specified on Drawings and in Section 09 90 00 - Painting and Coating.

3.10 PROTECTION

A. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.

B. Remove and replace panels that are wet, moisture damaged, and mold damaged.
1. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
2. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION

SECTION 09 31 13

THIN-SET CERAMIC TILING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Ceramic tile wainscot finish using the thinset application method at wood stud walls.

1.2 RELATED SECTIONS

A. Section 01 31 13 - Coordination.

B. Section 09 21 16 - Gypsum Board Assemblies.

1.3 REFERENCES

A. ANSI/TCA A108.5 - Ceramic Tile Installed with Dry-Set Portland Cement Mortar or Latex Portland Cement Mortar.

B. ANSI/TCA A118.1 - Dry-Set Portland Cement Mortar.

C. ANSI/TCA A118.4 - Latex-Portland Cement Mortar.

D. ANSI/TCA A137.1 - Specifications for Ceramic Tile.

E. ASTM C847 - Metal Lath.

F. TCA (Tile Council of America) - Handbook for Ceramic Tile Installation, latest edition.

1.4 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Submit product data indicating material specifications, characteristics, and instructions for using adhesives and grouts.

C. Submit samples under provisions of Section 01 33 00.

D. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

E. Submit maintenance data under provisions of Section 01 34 00.

F. Include recommended cleaning and stain removal methods, and cleaning materials.

G. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.5 QUALITY ASSURANCE

A. Conform to ANSI/TCA A137.1

B. Conform to TCA Handbook for Ceramic Tile Installation. ANSI/TCA A108.1, A108.5 and A108.10.

C. Maintain two (2) copies of TCA Handbook, latest edition, on site.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in the manufacture of products specified in this Section with minimum three years documented experience.

B. Installer: Company specializing in applying the work of this Section with minimum 3 years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00.

B. Store and protect products under provisions of Section 01 60 00.

C. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not install adhesives in a closed, unventilated environment.

B. Maintain 50 degrees F during installation of materials.

1.9 PRE-INSTALLATION CONFERENCE FOR CERAMIC TILE FLOOR AND WALL FINISH WORK

A. Convene two weeks prior to commencing the work of this Section.

B. General Contractor to coordinate this conference and inform the following persons, in writing, of the requirement for their attendance:
1. General Contractor’s Superintendent.
2. Owner’s Construction Contract Representative.
3. Architect’s Representative.
4. Tile Installer’s or Manufacturer’s Trade Association Representative.
5. Tile Installation Subcontractor.

C. Attendees shall review all pertinent details, specifications and referenced standards. Discussion shall include scheduling of work and coordination with other trades, installation procedures as proposed by the tile installation subcontractor, availability of specified tile and grout, submittal approvals, and guarantee requirements.

D. Attendees shall tour areas scheduled to receive tile work of this Section to discuss the acceptability of the substrate for tile installation. Intersecting or abutting walls shall all be measured to check true 90° square angle of such walls. Any unacceptable conditions will be noted in the meeting minutes and a date will be set for a reconvening of this conference to review the remediated substrate condition.

E. The Architect will take minutes of this meeting and any required subsequent meetings, noting all discussion items and resolutions/conclusions. Draft copies of the minutes will be furnished to all attendees for their review and input prior to issuance of finalized meeting minutes.

1.10 EXTRA STOCK

A. Provide extra quantity of ceramic tile units.

B. Provide 100 sq. ft. of each color of tile to Owner.

PART 2 PRODUCTS

2.1 MANUFACTURERS - TILE

A. Dal-Tile.

B. American Olean.

C. Florida Tile.

D. Monarch.

E. Morena.

F. Interceramic.

G. Substitutions: Under provisions of Section 01 60 00.

2.2 TILE MATERIAL

A. Ceramic Wall Tile: ANSI/TCA A137.1, conforming to the following (Based off of Daltile):

| | |
|---|---|
| Moisture Absorption: | ASTM C373; < 20% |
| Breaking Strength: | ASTM C546; 100-230 lbs |
| Scratch Hardness: | ASTM MOH's; 4.0-6.5 |
| Chemical Resistance: | ASTM C650; Resistant |
| Coefficient of Friction: | ASTM C1028; Wet: N/A; Dry: N/A |
| Size: | 4 1/4" x 4 1/4" |
| Surface Finish: | Semi-Gloss |
| Color: | See Drawings/Finish Schedule |

2.3 MANUFACTURERS - MORTAR AND GROUT

A. Laticrete International, Inc. – SpectraLOCK Pro Premium Grout (or approved equal);

B. Custom Building Products.

C. American Olean.

D. Bostik.

E. Dal-Tile.

F. Mer-Krete.

G. Mapei.

H. Substitutions: None

2.4 MORTAR MATERIALS

A. Mortar Materials: ANSI/TCA A118.1, ANSI/TCA A118.4; Portland cement, sand, latex additive, and water; site mixed or pre-mix.

2.5 GROUT MATERIALS

A. Grout for Ceramic Tile: Epoxy type - ANSI A118.3.

B. Color Admixture: See Drawings.

2.6 ACCESSORIES

A. Tile Backing Board: As specified in Section 09 21 16, up to a minimum of 6'-4" above finished floor.

B. Cove-Shaped and Bullnose Profiles (Based off of Daltile):

1. Cove (Base Tile): A-3401 or equal
2. Bullnose (Top Tile): S-4449 or equal

2.7 MORTAR MIX AND GROUT MIX

A. Mix and proportion cementitious materials for site made skim coat and bond coat.

B. Mix and proportion bond coat and grout materials in accordance with manufacturer's instructions. ANSI/TCA A108.1. ANSI/TCA A108.5. ANSI/TCA A118.1. ANSI/TCA A118.4. TCA Handbook for Ceramic Tile Installation. ANSI/108.1.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work. Verify that intersecting walls form true 90° corners, unless other angle is noted on drawings.

B. Beginning of installation means installer accepts condition of existing surfaces and substrate.

3.2 PREPARATION

A. Protect surrounding work from damage or disfiguration.

B. Vacuum clean existing surfaces substrate and damp clean.

C. Seal substrate surface cracks with filler.

D. Apply sealer conditioner to surfaces as recommended by adhesive manufacturer.

3.3 INSTALLATION - THINSET METHOD

A. Install thinset mortar, tile, and grout per TCA Handbook for Ceramic Tile Installation, latest edition: Handbook Numbers W202 over concrete walls; W245 over glass-mat-faced tile backerboard at plumbing chase walls and framed walls at showers; and W243 over moisture resistant gypsum board for other toilet room wall areas.

B. Lay tile to pattern indicated on Drawings. Do not interrupt tile pattern around openings.

C. Layout and install accessory trims and movement joints.

D. Cut and fit tile tight to penetrations through tile. Form corners and bases neatly. Align wall, base, and floor joints including the joints necessitated by cutting of floor tile units to fit room dimensions.

E. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar or excess grout. Align grout line with grout lines on floor. Layout and notify Architect of any areas this cannot be achieved.

F. Form internal angles coved and external angles bullnosed.
G. Sound tile after setting. Replace hollow sounding units.

H. Keep expansion control joints free of mortar or grout.

I. Allow tile to set for a minimum of 48 hours prior to grouting.

J. Grout tile joints.

K. Apply sealant to junction of tile and dissimilar materials and at junction of dissimilar planes.

3.4 CLEANING AND EXCESS GROUTING

A. Clean work under provisions of Sections 01 35 16.

B. Clean tile surfaces. Remove a stains, marks and the like.

C. Remove excess grout from all tile surfaces, excessively raised or depressed grouting is unacceptable and shall be remediated, by scoring and replacing entire grout line in each direction.

END OF SECTION

SECTION 09 65 13

RESILIENT BASE AND ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Resilient base and resilient accessories.

1.2 RELATED SECTIONS

A Section 03 30 00 - Cast-in-Place Concrete.

B. Section 09 65 19 - Resilient Tile Flooring.

1.3 REFERENCES

A. ASTM F1066 - Standard Specification for Vinyl Composition Floor Tile.

B. ASTM F1861 - Standard Specification for Resilient Wall Base.

C. FS L-F-475 - Floor Covering Vinyl, Surface (Tile and Roll), with Backing.

D. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant.

E. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

F. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Submit data describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.

C. Samples:
1. Submit manufacturer's color samples, 6 inches in length.
2. Submit three (3) samples, illustrating color and pattern for each resilient product required.

D. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.5 OPERATION AND MAINTENANCE

A. Per Division 01 - General Requirements

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

C. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten (10) years documented experience.

B. Installer: Company specializing in performing Work of this Section with minimum ten (10) years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with Section 01 60 00 for product storage and handling requirements.

B. Protect roll materials from damage by storing on end and in original undamaged packaging until ready for use.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Comply with Section 01 60 00.

B. Maintain temperature in storage area between 55 degrees F and 90 degrees F.

C. Store materials for not less than 48 hours prior to installation in area of installation at temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.9 EXTRA MATERIALS

A. Provide under provisions of Division 1 - General Requirements.

B. Furnish 100 lineal feet of base and other required resilient accessories of each type and color specified.

PART 2 PRODUCTS

2.1 RESILIENT PRODUCTS

A. Manufacturers:

1. Johnsonite.
2. Armstrong.
3. Flexco.
4. Substitutions: None.

B. Base: ASTM F1861, Type TS - Vulcanized; coved:

1. Height: 4 inch.
2. Thickness: 0.125 inch.
3. Finish: Satin.
4. Length: 4 foot sections.
5. Accessories: Premolded external and internal corners.

2.2 ACCESSORIES

A. Primers and Adhesives: Waterproof; types recommended by base manufacturer.

B. Moldings, Edge Strips, Transitions and Reducers: Same material and color as resilient base.

2.3 SOURCING

A. All products under this Section are to be provided from a single source manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work. Commencement of work means acceptance of substrate.

B. Verify concrete floors are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.

C. Verify floor and lower wall surfaces are free of substances capable of impairing adhesion of new adhesive and finish materials.

3.2 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with subfloor filler to achieve a smooth, flat, hard surface.

B. Prohibit traffic until filler is cured.

C. Clean substrate.

D. Apply primer as required to prevent “bleed-thru” or interference with adhesion by substances that cannot be removed.

3.3 EXISTING WORK

A. Extend existing resilient flooring installations using materials and methods compatible with existing installations.

3.4 INSTALLATION

A. Install scheduled flooring as specified.

B. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

C. Where floor finishes are different on opposite sides of door, terminate flooring under centerline of door panel.

D. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated, during flooring installation.

3.5 INSTALLATION - BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. At internal and external corners, use pre-molded units cut to fit. At exposed ends, use pre-molded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.

E. Install transitions and reducers of solid shape appropriate for application.

3.6 CLEANING

A. Under provisions of Division 01 - General Requirements..

B. Remove excess adhesive from floor, base, and wall surfaces without damage.

C. Clean, seal, and maintain resilient flooring products.

3.7 PROTECTION OF INSTALLED CONSTRUCTION

A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION

SECTION 09 65 19

RESILIENT TILE FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Resilient tile flooring.

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-in-Place Concrete.

B. Section 09 65 13 - Resilient Base and Accessories.

1.3 REFERENCES

A. ASTM E648 - Flooring Radiant Panel Test.

B. ASTM E662 - Smoke Chamber Test.

C. ASTM F1066 - Vinyl Composition Tile Reference Specification.

D. FS SS-T-312 - Tile, Floor: Asphalt, Rubber, Vinyl, Vinyl Composition.

1.4 REGULATORY REQUIREMENTS

A. Meet Class I requirements for critical radiant flux in accordance with ASTM E648 radiant panel test.

B. Achieve specific optical smoke density of 450 or less in accordance with ASTM E662 - Smoke Chamber Test.

1.5 SUBMITTALS

A. Submit product data under provisions of Section 01 33 00.

B. Provide product data on specified products, describing physical and performance characteristics, critical radiant flux rating, sizes, patterns and colors available.

C. Submit samples under provisions of Section 01 34 00.

D. Submit one sample 3 x 3 inches minimum in size, illustrating color and pattern for each floor material specified.

E. Submit layout diagrams of each area of floor scheduled to receive flooring. Indicate patterns, joints, cut, flooring, and reference point.

F. Submit manufacturer's installation instructions under provisions of Section 01 33 00.

G. Provide letter from manufacturer, installer, and contractor stating surface and substrate are acceptable for installation of the specified product.

H. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.6 OPERATION AND MAINTENANCE DATA

A. Submit cleaning and maintenance data under provisions of Division 01 - General Requirements.

B. Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

C. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.7 ENVIRONMENTAL REQUIREMENTS

A. Store materials for three days prior to installation in area of installation to achieve temperature stability.

B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during, and 24 hours after installation of materials.

1.8 EXTRA STOCK

A. Provide extra quantity of flooring of each material and color specified under provisions of Division 01 - General Requirements..

B. Provide 100 sq. ft. of each color of tile designated as a field tile and 30 sq. ft. of each color of tile designated as an accent tile to Owner.

C. Submit chart showing manufacturer and color designation of all field and accent tiles installed.

1.9 COORDINATION

A. Under provisions of Section 01 31 13.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Armstrong.

B. Substitutions: None.

2.2 TILE FLOORING MATERIALS

A. Vinyl Composition Tile: ASTM F1066, Class 2-through pattern, FS SS-T-312, Type IV, Composition 1; 12 x 12 inch size, 1/8 inch thick. Critical radiant flux of 0.45 watts per sq. cm. or greater; optical smoke density of 450 or less.

B. Color and Pattern: See Drawings.

2.3 BASE MATERIALS

A. See Section 09 65 13 - Resilient Base and Accessories.

2.4 ACCESSORIES

A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Sealer and Wax: Types recommended by flooring manufacturer.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Verify that surfaces are smooth and flat with maximum variation of 1/8 inch in 10 ft, and are ready to receive Work.

B. Verify concrete floors are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.

C. Beginning of installation means acceptance of existing substrate and site conditions.

### 3.2 PREPARATION

A. Remove sub-floor ridges and bumps, grind as required. Fill low spots, cracks, joints, holes, and other defects with subfloor filler.

B. Apply, trowel, and float filler to leave a smooth, flat, hard surface.

C. Prohibit traffic from area until filler is cured.

D. Vacuum clean substrate.

E. Apply primer to surfaces.

### 3.3 INSTALLATION

A. Install in accordance with manufacturers' instructions.

B. Mix tile from container to ensure shade variations are consistent.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Set flooring in place, press with heavy roller to attain full adhesion.

E. Lay flooring with joints and seams in accordance with seaming plan.

F. Install tile to square grid pattern with all joints aligned. Equal size tile width at perimeter of room.

G. Terminate flooring at centerline of door panel where adjacent floor finish is dissimilar.

H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

I. Install flooring in pan type floor access covers. Maintain floor pattern.

J. Install flooring under movable partitions without interrupting floor pattern.

### 3.4 PROTECTION

A. Prohibit traffic on floor finish for 48 hours after installation.

3.5 CLEANING

A. Remove excess adhesive from floor and any other surfaces without damage.

B. Clean, seal, and apply protective polish to the floor surfaces in accordance with manufacturer's instructions for initial maintenance.

3.6 FLOOR SURFACE TREATMENT

A. All resilient flooring surfaces on which pedestrians can walk shall be finished such that the minimum static coefficient of friction between the surface and normal hard soled shoes in strict accordance with ADA Guidelines, latest edition.

END OF SECTION

SECTION 09 68 16

SHEET CARPETING

PART 1 GENERAL

1.1 WORK INCLUDED

A. Carpet, stretched-in-with cushion underlay.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 03 30 00 - Cast-in-Place Concrete: Substrate.

C. Section 06 20 00 - Finish Carpentry

D. Section 09 65 13 – Resilient Base and Accessories

1.3 REFERENCES

A. Carpet and Rug Institute:
1. CRI 104 - Standard for Installation of Commercial Carpet.
2. CRI Green Label Plus Testing Program.

B. Consumer Products Safety Commission:
1. CPSC 16 CFR 1630 - Standard for the Surface Flammability of Carpets and Rugs.

C. National Fire Protection Association:
1. NFPA 253 - Standard Method of Test for Critical Radiant Flux for Floor Covering Systems Using a Radiant Heat Energy Source.

D. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Shop Drawings: Indicate seaming plan, method of joining seams, direction of carpet pile, location of edge moldings, dye lot changes, seaming method, and transition details to other flooring materials.

C. Product Data: Submit data on specified products, describing physical and performance characteristics; sizes, patterns, colors, and method of installation.

D. Samples:
1. Submit two (2) samples 12” x 12” inch in size illustrating color and pattern for each carpet and cushion material specified.
2. Submit two (2) 6 inch long samples of carpet seam.

E. Manufacturer’s Installation Instructions: Submit special procedures, perimeter conditions requiring special attention, and manufacturer’s recommended installation procedures.

F. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.5 CLOSEOUT SUBMITTALS

A. Section 01 77 00 - Contract Closeout: Closeout procedures.

B. Operation and Maintenance Data: Submit maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.

C. Digital Submittal: Submit one (1) CD containing a digital copy of all closeout submittals submitted in hard copy format

1.6 QUALITY ASSURANCE

A. Surface Burning Characteristics:
   1. Floor Finishes: Comply with the following:
      a. Class I, minimum 0.45 watts/sq cm when tested in accordance with NFPA 253.
      b. CPSC 16 CFR 1630.

B. Manufacturer's Warranty: Written warranty, signed by carpet manufacturer agreeing to replace carpet that does not comply with requirements or that fails within specified warranty period. Warranty does not include deterioration or failure of carpet due to unusual traffic, failure of substrate, vandalism, or abuse. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.
   1. Warranty Period: 10-Year Commercial Limited Warranty.
      a. Tuft bind.
      b. Backing integrity/delamination.
      c. Abrasive wear.
      d. Static protection.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five (5) years documented experience.

B. Installer: Company specializing in performing work of this Section with minimum five (5) years documented experience and approved by manufacturer.
   1. FCIB or IFCI certified carpet installers.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Material and Equipment.

B. Store materials in area of installation at temperatures between 40° F and 100° F for 48 hours prior to installation.

C. Maintain ambient temperature between 70° F and 90° F three (3) days prior to, during, and 24 hours after installation.

D. Ventilate installation area during installation and for three (3) days after installation.

1.9 EXTRA MATERIALS

A. Section 01 33 00 - Submittals: Spare parts and maintenance products.

B. Supply 5% of broadloom carpet and cushion of each type, color and pattern specified.

PART 2 PRODUCTS

2.1 CARPET

A. Manufacturers:
1. Shaw Industries.
2. Milliken Carpet.
3. Lee's Carpet.
4. Approved Equal

2.2 COMPONENTS

A. Broadloom Carpet (Based on Shaw, 00118 Copper Hill): Style Name: Neyland II 26; Style Number: CN530
1. Roll Width: 12'-0"
2. Fiber Content: 100% Permacolor Polypropylene
3. Description: Level Loop Pile
4. Gauge: 1/10
5. Tufts: 12.8 per inch
6. Finish Pile Thickness: 0.163 inch
7. Total Thickness: 0.317 inch
8. Face Weight: 26.0 ozs/yd2
9. Total Weight: 60 ozs/yd2
10. Density: 5,742
11. Primary Backing: Synthetic
12. Secondary Backing: Polypropylene
13. Dye Method: Solution Dyed
14. Coefficient of Friction: 0.72
15. Performance Characteristics:
    a. Critical Radiant flux Classification: Class 1
    b. Flooring Radiant Panel (ASTM E-648) Direct Glue: Class II
    c. Optical Density of Smoke (flaming): Not more than 450 per ASTM E 662-97.
    d. Electrostatic Propensity: No greater than 3.5 per AATCC 134-1991.
16. Color and Pattern: As specified on Drawings.
17. Interior Carpet: Maximum volatile organic compound content in accordance with CRI Green Label Plus Testing Program.

2.3 ACCESSORIES

A. Sub-Floor Filler: Latex-modified, hydraulic-cement-based formulation as recommended by flooring material manufacturer.

B. Seam Adhesive:
1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

C. Tackless Carpet Stripping: Water-resistant plywood in strips as required to match cushion thickness and that comply with CRI 104, Section 11.3.

D. Seaming Adhesive: Hot-melt adhesive tape or similar product recommended by carpet manufacturer for taping seams and butting cut edges at backing to form secure seams and to prevent pile loss at seams.

E. Adhesives: Water-resistant, mildew-resistant, nonstaining type to suit products and subfloor conditions indicated, that complies with flammability requirements for installed carpet and that is recommended by the carpet manufacturer.
1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 31 13 - Coordination and Meetings: Coordination and project conditions.

B. Verify all substrate floor surfaces are smooth, dry, flat, free of cracks, ridges, depressions, and foreign deposits, per manufacturer's recommendations, and are ready to receive work.

C. Verify concrete floors are ready for carpet installation by testing for moisture emission rate and alkalinity as recommended by manufacturer. Obtain instructions when test results are not within specified limits.

D. Proceed only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Comply with CRI 104, Section 6.2 - "Site Conditions: Floor Preparation".

B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

C. Remove coatings, including curing compounds, and other substances that are incompatible with adhesives.

D. Apply, trowel, and float filler to achieve a smooth, flat, hard surface. Prohibit traffic until filler is cured.

E. Vacuum clean substrate.

3.3 INSTALLATION

A. Install carpet tile in accordance with CRI 104.

B. Verify carpet match before cutting to ensure minimal variation between dye lots.

C. Lay out carpet and locate seams in accordance with CRI 104, Section 7.2 and Shop Drawings:
1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
2. Do not locate seams perpendicular through door openings.
3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
4. Locate change of color or pattern between rooms under door centerline.
5. Provide monolithic color, pattern, and texture match within each contiguous area.

D. Install carpet tight and flat on subfloor, well fastened at edges, with uniform appearance.

E. Do not bridge building expansion joints with carpet.

F. Stretched Tackless Installation: CRI 104, Section 11:
1. Install tackless strips with pins facing wall around entire perimeter, except across door openings. Use edge strip where carpet terminates at other floor coverings.
2. Space tackless strips slightly less than carpet thickness away from vertical surfaces, but not more than 3/8 inch.
3. Install cushion in maximum size pieces using spot adhesive to adhere to subfloor.
4. Lay out cushion so seams will be perpendicular to or offset at least 6 inches from carpet seams.

5. Butt cushion edges together and sew seams.
6. Trim cushion tight to edge of tackless strip and around projections and contours.
7. Following seaming, hook carpet onto tackless strip at one edge, power stretch, and hook firmly at other edges. Follow manufacturer's recommendations for method and amount of stretch.

G. Trim carpet neatly at walls and around interruptions.

H. Cut and fit carpet to butt tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, edgings, thresholds, and nosings. Bind or seal cut edges as recommended by carpet manufacturer.

I. Extend carpet into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

J. Complete installation of edge strips, concealing exposed edges.

## 3.4 CLEANING

A. Section 01 77 00 - Contract Closeout: Final cleaning.

B. Remove excess adhesive from floor, base, and wall surfaces without damage.

C. Remove yarns that protrude from carpet surface as recommended by manufacturer.

D. Clean and vacuum carpet surfaces with face-beater element as recommended by manufacturer.

## 3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 77 00 - Contract Closeout: Protecting installed construction; and CRI 104, Section 15 - "Protection of Indoor Installations".

B. Do not permit traffic over unprotected floor surface.

C. Cover carpeting in traffic areas with protective non-staining building paper. Do not use plastic sheeting.

END OF SECTION

SECTION 09 90 00

PAINTING AND COATING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation and field application of paints and coatings.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 06 20 00 - Finish Carpentry.

C. Section 08 11 13 – Hollow Metal Doors and Frames

D. Section 08 14 00 - Wood Doors.

E. Section 09 21 16 - Gypsum Board Assemblies.

F. Section 32 17 23 - Pavement Markings.

1.3 REFERENCES

A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Lacquer and Relating Products.

B. ASTM D2016 - Test Method for Moisture Content of Wood.

C. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

D. GC-03 - Anti-Corrosive Paints.

E. GS-11 - Product Specific Environmental Requirements.

F. SCAQMD Rule 1113 - Architectural Coatings.

1.4 DEFINITIONS

A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.5 SUBMITTALS

A. Submit product data, samples and manufacturer's instructions under provisions of Sections 01 33 00 and 01 34 00.

B. Provide product data on all finishing products and special coatings.

C. Submit two (2) samples 4 x 6 inch in size illustrating range of colors and textures available for each color of surface finishing product scheduled. Label submittal samples to match Materials List as specified on Drawings.

D. Submit in accordance with Section 01 33 00 - Submittals.

E. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.6 CLOSEOUT SUBMITTALS

A. Under provisions of Section 01 77 00 - Contract Closeout: Closeout procedures.

B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

C. Digital Submittal: Submit one (1) CD containing a digital copy of all closeout submittals submitted in hard copy format

1.7 QUALITY ASSURANCE / QUALIFICATIONS

A. Surface Burning Characteristics:
1. Fire Retardant Finishes: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.
2. Source primers for each coating system from same manufacturer as finish coats.

B. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with three years experience.

C. Applicator: Company specializing in commercial painting and finishing with three years documented experience.

D. Dry film thickness shall be as scheduled and will be tested for compliance. Areas failing test for thickness will be remediated as directed by Owner or Owner’s representative at Contractor’s expense.

1.8 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame/fuel/smoke rating requirements for finishes.

1.9 TESTS

A. Provide analysis and testing of coating finish under provisions of Division 01 - General Requirements.

B. Dry Film Thickness Testing will be conducted by Owner or Owner’s representative at their discretion.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.

C. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.

D. Store and protect products under provisions of Section 01 60 00.

E. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in well ventilated area, unless required otherwise by manufacturer's instructions.

F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

G. Store materials in manner and quantities in strict accordance with local ordinances, state laws, and fire underwriter regulations.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.

C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

F. Paints containing mercury compounds are not allowed on Southern Nevada Regional Housing Authority projects.

1.12 EXTRA STOCK

A. Provide five gallons (one container) of Unit field finish products, and five gallons (one container) of Community Center field finish products to Owner.

B. Label each container with color, sheen level, building and room locations, in addition to the manufacturer's label, and deliver to location designated by Owner.

C. Provide chart showing manufacturer, color and mixing formula of all colors of paint and stain installed.

1.13 WARRANTY

A. Section 01 78 36 - Contract Closeout: Product warranties.

B. Furnish manufacturer's standard warranty for products specified.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS - PAINT, PRIMER, STAIN, COATINGS

A. Frazee.

B. Dunn Edwards.

C. ICI Paint Products.

D. The Sherwin Williams Company.

E. Vista Paint Corporation.

F. Substitutions: Under provisions of Division 01 - General Requirements.

2.2 MATERIALS

A. Coatings: Ready mixed, with pigments uniformly dispersed.

B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.

C. Paint Formulation Standards:
1. Interior or exterior acrylic enamel, semi-gloss:
   a. Solids by volume - 30% minimum.
   b. Acrylic resins by weight - 20% minimum.
   c. Titanium Dioxide pigment by weight - 15% minimum.
   d. Dry Heat Resistance - 250° F for non-galvanized and 150° F for galvanized exterior metal surfaces.
2. Interior acrylic enamel, gloss:
   a. Solids by volume - 30% minimum.
   b. Acrylic resins by weight - 25% minimum.
   c. Titanium Dioxide pigment by weight - 15% minimum.
3. Interior or exterior alkyd enamel, semi-gloss:
   a. Solids by volume - 50% minimum.
   b. Alkyd resins by weight - 30% minimum.
   c. Titanium Dioxide pigment by weight - 15% minimum.
   d. Dry Heat Resistance - 250° F for non-galvanized and 150° F for galvanized exterior metal surfaces.

D. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

E. Gloss Range: Comply with ASTM D523 for gloss range. Refer to paragraphs 3.7 and 3.8, of this Section, for applicable gloss level.

Gloss to be as follows:
Flat: 15% measured at 85 degree meter.
Eggshell: 5% to 20% measure at 60 degree meter.
Satin: 15% to 35% measured at 60 degree meter.
Semi-Gloss: 30% to 65% measured at 60 degree meter.
Gloss: Over 65% measured at 60 degree meter.

## PART 3 EXECUTION

### 3.1 INSPECTION

A. Verify that surfaces and substrates conditions are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces is below the following maximums:
1. Plaster and Gypsum Wallboard: 12 percent.
2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
3. Interior Located Wood: 15 percent, measured in accordance with ASTM D2016.

D. Beginning of installation means acceptance of existing surfaces and substrate.

### 3.2 PREPARATION

A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing. Mask permanent labels.

B. Correct minor defects and clean surfaces which affect work of this Section.

C. Remove or seal marks which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

F. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.

G. Galvanized Surfaces: Remove surface contamination and oils and wash with non-oil based solvent. Wipe clean. Apply coat of etching primer. Do not allow any oil or grease residue to remain on the metal surface.

H. Interior Wood Items Scheduled to Receive Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

I. Wood Scheduled for Painting: Seal top and bottom edges with primer prior to finishing.

J. Residential Casework Scheduled for Stain: Wipe off dust, dirt, and grit, and remove glue, grease, oil, and any contamination that may prevent stain penetration. Clean, dry and finish sanded prior to staining. Moisture content of wood should be 6 - 8%.
   a. Mix and prepare materials according to manufacturer's written instructions.

3.3 PROTECTION

A. Protect elements surrounding the work of this Section from damage or disfiguration.

B. Repair damage to other surfaces caused by work of this Section.

C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.

D. Remove empty paint containers from site.

3.4 APPLICATION

A. Apply products in accordance with manufacturer's written instructions.

B. Do not apply finishes to surfaces that are not dry or contain dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

C. Apply each coat to uniform finish.

D. Allow applied coat to dry per paint manufacturer's instructions before next coat is applied.

E. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

F. Paint finish shall continue through behind all wall-mounted items.

G. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.

H. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

I. Labels: Do not paint over UL, FMG, or other code-required labels or equipment name,

identification, performance rating, or nomenclature plates.

J. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

K. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

L. Any existing walls being patch and textured due to demolition will be painted full length of wall from edge to edge.

3.5 CLEANING

A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.

B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.

C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

D. After completing painting, clean glass and spattered surfaces without damage.

3.6 SCHEDULE - EXTERIOR SURFACES (DFT = Dry Film Thickness)

A. Traffic and lane striping as specified in Section 31 15 00.

B. Steel - Unprimed
1. One coat alkyd or 100% acrylic rust inhibitive metal primer, 1.25 mils DFT.
2. Two coats alkyd industrial maintenance, semi-gloss, 2.5 mils DFT.

C. Steel - Shop Primed
1. Touch-up with alkyd or 100% acrylic rust inhibitive metal primer, 1.25 mils DFT.
2. Two coats alkyd industrial maintenance, semi-gloss, 2.5 mils DFT.

D. Steel - Galvanized
1. One coat alkyd galvanized or non-ferrous metal primer, 1.3 mils DFT.
2. Two coats alkyd industrial maintenance, semi-gloss, 2.5 mils DFT.

3.7 SCHEDULE - INTERIOR SURFACES (DFT = Dry Film Thickness)

A. Wood - Painted
1. One 100% acrylic latex primer sealer, flat, 1.25 mils DFT.
2. Two coats 100% acrylic non-blocking enamel, semi-gloss, 3.5 mils DFT.

B. Wood - Transparent Finish
1. Filler coat (for open grained wood only).
2. One coat alkyd stain.
3. One coat interior wood sanding sealer, vinyl copolymer type.
4. Two coats polyurethane varnish, non-yellowing.

C. Steel - Unprimed
1. One coat 100% acrylic rust inhibitive metal primer, 1.25 mils DFT.
2. Two coats 100% acrylic enamel, semi-gloss, 3.5 mils DFT.

D. Steel - Primed
1. Touch-up with 100% acrylic rust inhibitive metal primer, 1.25 mils DFT.

2. Two coats 100% acrylic enamel, semi-gloss, 3.5 mils DFT.

E. Steel - Galvanized
1. One coat alkyd galvanized or non-ferrous metals primer, 1.3 mils DFT.
2. Two coats 100% acrylic enamel, semi-gloss, 3.5 mils DFT.

F. Gypsum Board - in Dry Areas
1. One coat 100% acrylic latex enamel primer, 1.2 mils DFT.
2. Two coats 100% acrylic enamel, 2.8 mils DFT:
   a. Walls - semi-gloss.
   b. Soffits and ceilings - semi-gloss.

G. Gypsum Board - in Wet Areas
1. One coat 100% acrylic enamel primer, 1.2 mils DFT.
2. Two coats 100% acrylic enamel: 2.8 mils DFT.
   a. Walls - semi-gloss.
   b. Soffits and Ceilings - gloss.

H. Concrete - in Wet Areas
1. Two coats block filler, 12.0 mils DFT.
2. Two coats 100% acrylic enamel, gloss, 2.0 mils DFT.

I. Concrete - Dry Areas
1. Two coats block filler, 12.0 mils DFT.
2. Two coats 100% acrylic enamel, semi-gloss, 2.0 mils DFT.

J. Concrete - Sealed
1. Sealer - per manufacturer's recommendations for common block.

3.8 SCHEDULE - SURFACE FINISH AND COLORS

A. See Drawings.

END OF SECTION

SECTION 10 14 00

SIGNAGE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Photo-etched zinc signs and accessories required for complete installation.

B. Plastic interior panel signs.

C. Cast Metal Symbol

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 09 21 16 - Gypsum Board Assemblies: Mounting substrate.

C. Section 09 90 00 - Painting and Coating: Adjacent finish.

1.3 SUBMITTALS

A. Submit shop drawings under provisions of Section 01 33 00 - Submittals, and Section 01 34 00 - Shop Drawings and Samples.

B. Submit shop drawings listing sign styles, finishes, lettering dimensions and locations, and overall dimensions of each sign.

C. Submit samples under provisions of Section 01 33 00 - Submittals.

D. Submit two (2) full-size sample zinc-etched signs, illustrating thickness, etching depth, letter size and Braille characters.

E. Submit manufacturer's installation instructions under provisions of Section 01 33 00 - Submittals.

F. Submit product data under provisions of Section 01 60 00 - Material and Equipment.

G. Include installation template and hardware.

H. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site under provisions of Section 01 60 00 - Material and Equipment.

B. Store and protect products under provisions of Section 01 60 00 - Material and Equipment.

C. Package signs, labeled in name groups.

1.5 SYSTEM DESCRIPTION

A. Signage package shall consist of:
1. Room usage signage to meet the requirements of ICC/ANSI A117.1-2003, U.S. Public Law 92-112 (1986), UFAS - Uniform Federal Accessibility Standards, and Department of Justice - ADA Standards for Accessible Design (28-CFR Part 36).

2. Directional signage indicating accessibility route.

3. Directional signage indicating accessibility to restrooms.
4. Code-required signage.

B. Signage design and installation shall comply ANSI A117.1-2003 Section 703.3, UFAS - Uniform Federal Accessibility Standards, and Department of Justice - ADA Standards for Accessible Design (28-CFR Part 36).

1.6 WARRANTY

A. Provide a two (2) year warranty in writing, warranting against manufacturing defects.

PART 2 PRODUCTS

2.1 APPROVED MANUFACTURERS

A. Advance Corp./Braille Tac Division, 327 York Avenue; St. Paul, MN 55101.

B. Insignia Inc. 1933, 135 East, New Braunfels, TX 78130.

C. Vision Mark, Inc., 2309 Industrial Avenue, Sidney, OH 45365-4219. Distributed by Mountain States Specialty, 602.839.4751 or 702.318.3868.

D. Nova Polymers, Inc., 8 Evans Street, Suite 201; Fairfield, NJ 07004.

D. Gemini Incorporated, 103 Mensing Way; Canon Falls, MN 55009

E. Or approved equal.

2.2 ETCHED ZINC SIGNAGE

A. Etched zinc metal signs manufactured as follows:
1. Metal alloy to contain 99% zinc.
2. Nominal material depth shall be a minimum of .125” with an etching depth of 1/32” minimum.
3. Color with a minimum 70% contrast as required by Department of Justice - ADA Standards for Accessible Design (28-CFR Part 36); between background and characters. Background and characters shall have matte finish. See Drawings for colors.
4. Sign shall be coated with a graffiti resistant clear coat.
5. Lettering, Braille, and Symbols/Pictographs shall conform to Department of Justice - ADA Standards for Accessible Design (28-CFR Part 36) requiring 1/32 inch raised above background. All characters must be accompanied by Grade 2 Braille.
6. Sizes and quantities as shown on drawings and/or schedule.
7. All work done shall be machine-fabricated in accordance with Architect approved shop drawings with straight lines, square corners or smooth bends, free from imperfections which may affect appearance or serviceability. Curved sections shall be formed smooth and even radii. Signs shall be of one-piece construction.
8. Provide predrilled holes for screw attached signs. All signs are screw-attached with GE 2000 silicone adhesive in accordance with manufacturer’s instructions.

B. Lettering Style: Sans Serif.

C. Sizes of letters and numbers shall be as shown on Drawings.

D. Letters and numbers shall be centered on sign.

E. Each sign shall include the use of two (2) vandal-proof anchors, minimum, per sign, 3 inches or less in height, and 4 anchors for larger signs.

F. Sign Size:

1. Sizes and quantities as shown on Drawings and/or schedule.

2.3 HANDICAPPED PARKING AND ACCESSIBLE ROUTE SIGNAGE

A. Furnish and install handicapped parking and accessible route signs as detailed and where located on drawings.

B. Size: 18 inches x 24 inches.

C. Screened on 16 ga. steel, 2 holes for post mounting. Reflective embossed zinc chromated baked enamel, 3 coats. 2 inches o.d. round galvanized posts set in concrete footings.

2.4 PLASTIC INTERIOR PANEL SIGNS/ADA RESTROOM SIGNAGE

A. Plastic Interior Panel Signage

1. Photopolymer Signs: Constructed of one-piece, interior grade photopolymer sheet, 1/8” base thickness minimum, moisture-resistant, non-glue nylon photopolymer on UV-resistant sign base. Laminated, added-on characters, and engraved signs are not acceptable.

2. Color as specified on Drawings with minimum 70% contrast as required by Department of Justice - ADA Standards for Accessible Design (28-CFR Part 36); between background and characters.

3. Lettering, Braille, and Symbols/Pictographs shall conform to Department of Justice - ADA Standards for Accessible Design (28-CFR Part 36) requiring 1/32 inch raised above background. All characters must be accompanied by Grade 2 Braille.

4. Sizes and quantities as shown on Drawings and/or schedule.

5. Surface Burning Characteristics: Flame spread/smoke developed rating less than 75/120, tested to ASTM E84 and UL 723.

6. Tape Adhesive: Double-sided, permanent, pressure sensitive, water-resistant.

7. Lettering Style: Helvetica Medium.

B. ADA Restroom Signage

1. Restroom identification signage shall be a 6"x9" with 1/2” radius plaque with gender identification wording and pictograms, and with the international symbol of accessibility. See drawings for more information.

2. Photopolymer Signs: Constructed of one-piece, interior grade photopolymer sheet, 1/8” base thickness minimum, moisture-resistant, non-glue nylon photopolymer on UV-resistant sign base. Laminated, added-on characters and engraved signs are not acceptable.

3. Color: Blue matte textured background with contrasting white graphics.

4. All pictograms, borders, lettering and Tactile II Braille are raised 1/32 inch high.

5. Lettering Style: 11/16 inch tall and sans-serif style font.

6. Tape Adhesive: Double-sided, permanent, pressure sensitive, water-resistant.

C. ADA Restroom Directional Signage

1. Directional signage 8 inches x 8 inches indicating “TO RESTROOMS” (with gender pictograms, international symbol of accessibility and appropriate arrow indicator) shall be included in the sign package. Provide directional signage to restrooms where shown on Floor Plans.

2, Photopolymer Signs: Constructed of one-piece, interior grade photopolymer sheet, 1/8” base thickness minimum, moisture-resistant, non-glue nylon photopolymer on UV-resistant sign base. Laminated, added-on characters, and engraved signs are not acceptable.

3. Color: Blue matte textured background with contrasting white graphics.

4. All pictograms, borders, lettering and Tactile II Braille are raised 1/32 inch high.

5. Lettering Style: 5/8 inch tall and sans-serif style font.

2.5 CAST METAL SYMBOL AT MONUMENT SIGN

1. Color: Aluminum finish painted Medium Bronze.

2. Mounting: Projected spacer mounting
   a. Set studs in adhesive cement.
   b. Insert pre-cut spacers between the symbol and the mounting surface.
   c. Size: International symbol of accessibility to be 7” tall.

3. See drawings for location and quantity.

2.6 ACCESSORIES

A. Mounting Hardware: As specified, manufacturer’s standard.

B. Tape Adhesive: Double-sided tape, permanent adhesive.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are ready to receive work.

B. Beginning of installation means installer accepts existing surfaces.

C. Coordinate with work of other sections interfacing with signage installation on which work could be detrimental to signage.

3.2 INSTALLATION

A. Install all signs plumb and level in accordance with manufacturer’s instructions.

B. Install signs after surfaces are finished, in locations scheduled.
C. Locate sign on wall surface, as indicated on Drawings.

D. Clean and polish per manufacturer’s instructions.

END OF SECTION

SECTION 10 28 00

TOILET, BATH, AND LAUNDRY ACCESSORIES

PART 1 GENERAL

1.1 WORK INCLUDED

A. Toilet accessories; shower and bath accessories; unit accessories; utility room accessories, and attachment hardware.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 09 21 16 - Gypsum Board Assemblies: Installation of concealed anchor devices.

C. Section 09 31 20 - Thin-Set Ceramic Tiling

D. Section 09 90 00 - Painting and Coating: Wall finish.

1.3 REFERENCES

A. ANSI A117.1 - Specifications for “Making Buildings and Facilities Accessible To and Usable By Physically Handicapped People.”

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.

D. ASTM A269 - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

E. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

F. ASTM A666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

G. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

H. ASTM C1036 - Standard Specification for Flat Glass.

I. ADA Accessibility Guidelines (ADAAG), latest version.

J. FS A-A-3022 - Mirrors, Glass.

K. GC-03 - Anti-Corrosive Paints.

L. GS-11 - Product Specific Environmental Requirements.

M. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.4 DESIGN REQUIREMENTS

A. Conform to International Building Code, ADA Guidelines and ANSI A117.1-'03 for installing work in conformance with ANSI A117.1, 2003.

1.5 SUBMITTALS

A. Submit product data under provisions of Sections 01 33 00 and 01 34 00.

B. Product Data: Submit data on each accessory describing size, materials, components, finish, details of function, and attachment methods.

C. Manufacturer's Installation Instructions: Submit special procedures and conditions requiring special attention.

D. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.6 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Comply with manufacturer's instructions. Deliver materials to the site in manufacturer's original unopened packaging with labels intact. Protect finished surfaces with removable wrapping.

B. Storage: Adequately protect against damage while stored on site.

1.7 QUALITY ASSURANCE

A. Flame Resistant Fabric: Passes when tested in accordance with NFPA 701, Test 1 or Test 2.

1.8 COORDINATION

A. Section 01 31 13 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

PART 2 PRODUCTS

2.1 COMPONENTS

A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.
   3. Back paint components where contact is made with building finishes to prevent electrolysis.
   4. Hot-dip galvanized ferrous metal and fastening devices.

B. Keys: Furnish all keys labeled for each accessory to Owner; master key and accessories.

C. Sheet Steel: ANSI/ASTM A366.

D. Stainless Steel Sheet: ASTM A167/A66, Type 304, No. 4 finish (satin).

E. Tubing: ASTM A269, stainless steel.

F. Adhesive: Two component epoxy type, contact type, waterproof.

G. Fasteners, Screws, and Bolts: Hot-dip galvanized, security type.

H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

I. Mirror Glass: No. 1 quality 1/4" glass mirror electrolytically copper-plated; warranted against silver spoilage for fifteen (15) years. Back is protected by 3/16" thick water-resistant polyethylene padding.

J. Adhesive: Waterproof, as recommended by manufacturer.
1. Interior Adhesives: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

K. Fasteners, Screws, and Bolts: Hot-dip galvanized, tamper-proof.

2.2 TOILET ACCESSORY ITEMS AT THE COMMUNITY CENTER (REFER TO DRAWINGS FOR LOCATIONS)

A. Surface-Mounted Paper Towel Dispensers: Existing to be removed and reused. See Drawings for location.

B. Surface-Mounted Soap Dispenser: Existing to be removed and reused. See Drawings for location.

C. Grab Bar: Type 304 polished stainless steel, 18 gauge, 1-1/4 inch outside diameter, ends welded to flanges; distance to finished wall: 1-1/2 inches; with concealed mounting plates firmly attached to sustain loads in excess of 900 lbs. and complying with ANSI requirements. Bobrick B-5806 Series - lengths as shown on Drawings.

D. Lavatory Glass Mirror: Existing to be removed and reused. See Drawings for location.

E. Single-Roll Toilet Tissue Dispenser: Existing to be removed and reused. See Drawings for location.

2.4 TOILET ACCESSORY ITEMS AT RESIDENTIAL UNITS (REFER TO DRAWINGS FOR LOCATIONS)

A. Towel Bar in Unit: Existing to be removed and reused. See Drawings for location.

B. Surface-Mounted Medicine Cabinet with Lavatory Mirror in Unit: Existing to be removed and reused. See Drawings for location.

C. Surface-Mounted Single Roll Tissue Dispenser: Existing to be removed and reused. See Drawings for location.

D. Shower Curtain Rod in Unit: Existing to be removed and reused. See Drawings for location.

E. Grab Bar: Type 304 polished stainless steel, 18 gauge, 1-1/4 inch outside diameter, ends welded to flanges; distance to finished wall: 1-1/2 inches; with concealed mounting plates firmly attached to sustain loads in excess of 900 lbs. and complying with ADA requirements. Bobrick B-5806 Series - lengths as shown on Drawings.

F. Roll-in ADA Shower and Accessories: Multiple piece ADA compliant shower and wall surround construction with 3/4" threshold, and white gelcoat Vikrell material with smooth wall finish. For models and sizes, reference Plumbing Drawings. For mounting locations, reference Accessibility Details drawing sheets and Interior Elevations.

1. Accessories: Kohler hand-held shower system K-8501, 5' flexible hose K-9514, Kohler adjustable wall bracket kit K-8517, Shower Slide Bar K=9516; Shower Arm K-9512, Shower Head K-8544; Kohler Bancroft Rite Temp Pressure Balancing valve TRM K-T10584. Kohler Bancroft Transfer Valve Trim K-T10595.

G. Transfer ADA Shower and Accessories: Multiple piece ADA compliant shower and wall surround construction with 3/4" threshold, frameless white HDPE fold-up seat, and white gelcoat Vikrell material with smooth wall finish. For models and sizes, reference Plumbing Drawings. For mounting locations, reference Accessibility Details drawing sheets and Interior Elevations.

1. Accessories: Kohler hand-held shower system K-8501, 5' flexible hose K-9514, Kohler adjustable wall bracket kit K-8517, Shower Slide Bar K=9516; Shower Arm K-9512, Shower Head K-8544; Kohler Bancroft Rite Temp Pressure Balancing valve TRM K-T10584. Kohler Bancroft Transfer Valve Trim K-T10595

H Bathtub: ADA compliant bath and wall surround, white finish. Sterling #71091114 or 71091124 ADA Bathtub, NO grab bars at head of tub. Kohler hand-held shower system K-8501 (CP), 5' flexible hose K-9514, Kohler Adjustable wall bracket kit K-8517, Shower slide bar K-9516, Shower Arm K-9512, Shower Head K-8544, Transfer valve trim K-T10595-4; Master Shower three way valve K-687-K. Kohler Bancroft Rite Temp Pressure balancing valve trim K-T10584.

I. Water Closet: American Standard Cadet 3 Right Height #2386.012, 12" rough-in elongated vitreous china ADA Residential units shall have close front seat / cover. Common areas shall have open front seat.

J. Lavatory: American Standard Rondalyn #0491 ADA

K. Lavatory Faucet: #2175.200 with pop up drain.

2.5 FACTORY FINISHING

A. Stainless Steel: No. 4 satin brushed finish, unless otherwise noted.

B. Chrome/Nickel Plating: ASTM B456, Type SC2, satin finish, unless otherwise noted.

C. Baked Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats epoxy baked enamel.

D. Galvanizing: ASTM A123/A123M; hot-dip galvanize after fabrication.

E. Galvanizing for Nuts, Bolts and Washers: ASTM A153/A153M.

F. Shop-Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions are ready to receive work of this Section.

B. Beginning of installation means acceptance of existing conditions and substrate.

C. Verify exact location of accessories for installation.

D. Verify field measurements are as indicated on product data.

E. Refer to Section 06 10 00 - Rough Carpentry for installation of blocking, reinforcing plates and concealed anchors.

F. Coordinate with other Work which affects, conflicts with, or will be concealed by this Work.

3.2 PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.3 EXISTING WORK

A. Clean and repair existing toilet accessories which remain or are to be reinstalled.

3.4 INSTALLATION

A. Install fixtures, accessories and items in accordance with manufacturer's instructions.

B. Install plumb and level, securely and rigidly anchored to substrate.

C. Mounting Heights and Locations: As required by accessibility regulations and as indicated on Drawings.

3.5 CLEANING

A. During the course of work and on completion, remove and dispose of excess materials, equipment and debris from premises. Upon completion, work shall be in clean condition.

3.6 SCHEDULES

A. As specified on Drawings.

END OF SECTION

SECTION 11 31 00

RESIDENTIAL APPLIANCES

PART 1 GENERAL

1.1 WORK INCLUDED

A. Unit Refrigerators.

B. Unit Range.

C. Unit Re-circulating Range Hood.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements

1.3 REFERENCES

A. UFAS - Uniform Federal Accessibility Standards, Sections 4.34.6.6, 4.34.6.7 and 4.34.6.8.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Product Data: Required for each product indicated.

C. Manufacturer's Installation Instructions: Required.

D. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Required.

B. Digital Submittal: Submit one (1) CD containing a digital copy of all closeout submittals submitted in hard copy format.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. UL and NEMA Compliance: Provide electrical components required as part of residential appliances that are listed and labeled by UL and that comply with applicable NEMA standards.

C. AGA and ANSI Standards: Provide gas-burning appliances that carry the design certification seal of AGA and that comply with ANSI Z21-Series standards.

D. AHAM Standards:
1. Refrigerators and Freezers: total volume and shelf area ratings certified according to ANSI/AHAM HRF-1.

E. Energy Ratings: Provide residential appliances that carry labels indicating energy-cost analysis (estimated annual operating costs) and efficiency information as required by the Federal Trade Commission.

F. Warranty: Manufacturer's standard warranty in which manufacturer agrees to repair or replace appliance that fails in materials and workmanship within specified warranty period.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver appliances only after utility rough-in is complete and construction in spaces to receive appliances is substantially complete and ready for installation.

B. Storage: Adequately protect against damage while stored at the site.

PART 2 PRODUCTS

2.1 RESIDENTIAL EQUIPMENT

A. Manufacturers:
1. GE.
2. Frigidaire.
3. Broan.
4. Or approved equal.

2.2 COMPONENTS

A. Refrigerator at Accessible Two (2) and Three (3) Bedroom Units Only: GE Model #GTH18IBXWW.
1. 18 cubic feet capacity.
2. Top freezer.
3. Free-standing type.
4. Self-defrosting.
5. Interior lighting.
6. Five (5) freezer shelves; five (5) fixed freezer door shelves.
7. Three (3) glass fresh food cabinet shelves, 4 door bins.
8. Three (3) electronic temperature management sensors.
9. External ADA-accessible electronic temperature controls.
10. Auto energy saver.
11. Never-clean condenser.
12. Quiet design.
13. Size to fit as shown on Drawings.
14. Fresh Food Capacity: 12.93 cu. ft.
15. Freezer Capacity: 5.09 cu. ft.
16. White-on-white.
17. ADA-compliant per UFAS Section 4.34.6.8 - (a) Have at least 50 percent of the freezer space below 54 inches above the finish floor; (b) Have 100 percent of the refrigerator space and controls below 54 inches.
18. EnergyStar.
19. Manufacturer's standard warranty.

B. Range: GE Model #JGB27DEMWW
1. 30" Free-standing.
2. Electric.
3. Self-cleaning.
4. Up-front ADA-accessible controls with easy to read graphics and 1-touch control.
5. Interior oven light.
6. Natural gas.
7. All-purpose burners ÷ (4) 9,500/B90 btu.

8. Cookstop Burner Grates: Deluxe porcelain; square.
9. In-oven broiling.
10. Oven interior light.
11. Cooktop Surface: One-piece upswept porcelain enamel.
12. Two (2) oven racks with six (6) rack positions.
13. Clear view window.
14. Size to fit as shown on Drawings.
15. Manufacturer's standard warranty.
16. Total Capacity: 4.8 cu. ft.
17. White-on-white.

D. Re-circulating Range Hood: Air King Ventilation Products - ADA Series.
1. Two-speed, thermally protected, permanently lubricated motor. Rated 120 volts, 60 Hz with two electronically balanced blower wheels.
2. Non-ducted, with non-ducted filter.
3. Controls: Wall-mounted dual rocker switch with plate, white finish. Fits into triple gang box.
4. Sides shall be mitered and bottom edge hemmed with no sharp edges.
5. Size: 30" wide, unless noted otherwise.
6. White finish.
7. Ducting Options: Vertical
8. Filters: Grease filter; dishwasher safe, GF-01.

## PART 3 EXECUTION

### 3.1 INSTALLATION

A. Set and adjust units level and plumb once finishes have been completed.

B. Verify that clearances are adequate to properly operate equipment.

C. Connect to utilities and make units operational. Check and adjust range thermostats for correct temperature.

### 3.2 CLEANING

A. During the course of work and on completion, remove and dispose of excess materials, equipment and debris from premises. Leave work in clean condition.

END OF SECTION

SECTION 12 35 30

RESIDENTIAL CASEWORK

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Units: Kitchen and bathroom casework and hardware.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 06 10 00 - Rough Carpentry: Grounds and support framing.

C. Section 06 20 00 - Finish Carpentry: Related trim not specified in this Section.

D. Section 07 90 00 - Joint Sealers.

E. Section 09 30 00 - Tiling.

F. Section 09 65 19 - Resilient Tile Flooring.

G. Section 09 90 00 - Painting and Coating.

H. Section 11 31 00 - Residential Appliances.

I. Section 12 36 23 - Plastic Laminate-Clad Countertops.

J. Section 22 40 00 - Plumbing Fixtures.

K. Section 26 00 10 - General Electrical Requirements.

1.3 REFERENCES

A. ANSI A117.1-2003 – Accessible and Usable Buildings and Facilities.

B. Architectural Woodwork Standards (AWS), latest edition

C. ANSI Z34.1 - Third Party Certification Programs for Products, Processes, and Services.

D. Builders Hardware Manufacturers Association (BHMA), A156.9 Cabinet Hardware.

E. Department of Justice – ADA Standards for Accessible Design (28 CFR Part 36)

F. FSC Guidelines - Forest Stewardship Council Guidelines.

G. HUD Minimum Property Standards for Housing, latest edition.

H. UFAS – Uniform Federal Accessibilities Standards

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

B. Shop Drawings: Submit under provisions of Section 01 34 00and as follows:
1. Submit shop drawings in conformance with the requirements of the Architectural Woodwork Standards.

2. Furnish a Woodwork Institute Certified Compliance Label on the first page of the shop drawings.
3. Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location, location of plumbing and electrical service connections, and schedule of finishes; 3/4" = 1'-0" at details and 1/4" = 1'-0" at plans and elevations.

C. Product Data: Manufacturer's catalog with specifications and construction details.

D. Samples:
1. Submit three (3) samples, minimum size 3 x 6 inches of each finish and edging specified,
2. Submit two (2) samples of each type of hardware specified.

E. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.5 MOCKUP

A. Provide mockup of full size base and wall cabinets under provisions of Section 01 34 00.

B. Provide units with specified countertop; with hardware installed.

C. Units will be examined to ascertain quality and conformity to American Woodwork Standards quality level standards and specification requirements.

D. Installed mockup for each type may remain as part of the Work and is to be reviewed and approved by Architect.

1.6 QUALITY ASSURANCE

A. Certified Compliance: Perform work in accordance with Architectural Woodwork Standards requirements for the grade or grades specified.
1. Provide Woodwork Institute Certificates and Labels
a. Woodwork Institute Certified Compliance:
1. Provide a Woodwork Institute Certificate of Compliance indicating the architectural woodwork products being supplied and certifying that those products meet the requirements of the Architectural Woodwork Standards and of the plans and specifications.
2. Provide a Woodwork Institute Certified Compliance label on each elevation of casework and on each laminated plastic countertop.
3. On substantial completion provide a Woodwork Institute Certificate of Compliance certificate certifying that installation of architectural woodwork products meets the requirements of the AWS.
4. All fees charged by the Woodwork Institute for their Certified Compliance program are the responsibility of the millwork manufacturer and/or installer and shall be included in their bid.

B. All finishing shall be factory-applied.

C. Source Limitations for Cabinets: Obtain cabinets through one source from a single manufacturer.

D. Environmental Limitations: Do not deliver or install casework until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining temperature and relative humidity at occupancy levels during the remainder of the construction period.

E. Established Dimensions: Where casework is indicated to fit to other construction, establish dimensions for areas where casework is to fit. Coordinate construction to ensure that actual dimensions correspond to established dimensions. Provide fillers and scribes to allow for trimming and fitting where shown on Drawings.

F. Coordinate layout and installation of blocking and reinforcement in partitions for support of casework.

G. Coordinate locations of utilities that will penetrate countertops or backsplashes.

H. Moisture Content of all wood shall be between 6 - 12%.

I. All exposed-to-view portions of installed cabinets shall have a finished surface, including sides and back of sliding-track door units.
1. Do not use two adjacent exposed surfaces that are noticeably dissimilar in color, grain, figure, or natural character markings.

J. Regulatory Requirements: Comply with following:
1. Accessibility:
a. Architectural Barriers Act of 1968 as amended and HUD implementing regulations 24 CFR Part 40.
1) Uniform Federal Accessibility Standards (UFAS).
b. Section 504 of the Rehabilitation Act of 1973 as amended and HUD implementing regulations 24 CFR Part 8.
c. Fair Housing Accessibility Guidelines 24 CFR Chapter 1.
d. Americans with Disabilities Act of 1990 (ADA) 28 CFR Part 35.

1.7 QUALIFICATIONS

A. Manufacturer:
1. Firm (woodwork manufacturer) with not less than 5 years of production experience similar to this Project, whose qualifications indicate the ability to comply with the requirements of this Section.
2. The woodwork manufacturer must have at least one project in the past 5 years where the value of the woodwork was within 20 percent of the cost of woodwork for this Project.

B. Single Source Responsibility: A single manufacturer shall provide and install the work of this Section.

1.8 WARRANTY

A. Section 01 78 36 - Warranties and Bonds

B. All materials and workmanship shall carry a five (5) year warranty.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Packing, Shipping, Handling, and Unloading:
1. Do not deliver cabinets until building or storage area is enclosed and sufficiently dry to prevent damage from excessive changes in moisture content.
2. Protect casework and equipment from damage during delivery, storage, installation and subsequent building operations.

1.10 PROJECT CONDITIONS

A. Field Measurements: Field measure spaces to receive cabinets before beginning fabrication.
1. Cabinets: Conform to building lines and neatly fitted around openings, pipes, and other obstructions.

1.11 COORDINATION AND SCHEDULING

A. Coordinate work under provisions of Section 01 31 13.

B. Material supplier shall attend Pre-Installation Meeting with General Contractor to coordinate delivery and installation.

C. Coordinate the work with plumbing and electrical rough-in, and other applicable trades.

PART 2 PRODUCTS

2.1 RESIDENTIAL CASEWORK

A. Grade: AWS Custom Grade.

B. Manufacturers:
1. A member and licensee of the Woodwork Institute, or an Accredited participant in the AWS QCP program.

2.2 COMPONENTS

A. General:
1. Hardwood Plywood: HPVA HP-1.
2. Particleboard: ANSI A208.1, Grade M-2.
3. Medium-Density Fiberboard: ANSI A208.2, Grade MD.
4. Hardboard: AHA A135.4, Class 1 Tempered.
5. Solid Wood: Clear hardwood lumber of species indicated, free of defects.
6. Plywood: ANSI/HPMA HP and PS1. Hardwood plywood with face veneer of species indicated, with Grade A faces and Grade C backs of same species as faces.
7. Concealed Materials: Solid wood or plywood, of any hardwood or softwood species, with no defects affecting strength or utility; particleboard; medium-density fiberboard; or hardboard.
8. Cabinet Hardware:
   a. Manufacturer's standard units complying with BHMA A156.9, of type, size, style, material, and finish as selected by Architect, corrosion resisting.
9. Interior Composite Wood and Agrifiber Products: Contain no added urea-formaldehyde resins.

B. Face Frame: 3/4" solid hardwood.

C. End Panel Construction: 3/4" hardwood for exposed surfaces; Melamine over 3/4" plywood for concealed surfaces.

D. Base and Upper Cabinet Floor: Melamine over 3/4" plywood.

E. Sub Top for Base Cabinet: 3/4" Plywood or 1x blocking as required.

F. Wall Backs for Upper Cabinets: Melamine over 1/4" plywood.

G. Base Cabinet Backs: Melamine over 3/8" plywood.

H. Hanging Rails: 3/4" solid wood base rails and 1/2" solid wood wall rails.

I. Toe Kicks: Plastic laminate over 3/4" plywood at all base cabinets, longest sizes possible. Caulk between toe kicks and floor.

J. Corner Blocks I-Beam Braces: 3/4" engineered wood, MDF or plywood dadoed or doweled into face frame, end panels and back hanging rails.

K. Shelves: Meeting the requirements of the Architectural Woodwork Standards for the required span. Fixed and adjustable shelving required.

L. Drawers: 1/2" Hardwood four-sided dovetail drawer box with 1/4" plywood floor.

M. Drawer Runners: Full extension ball bearing undermount with 75 lb. load capacity, self-closing design and controlled closing mechanism, complying with BHMA A156.9, Type B05011 or B05091.

N. Hinges: Self-closing concealed wrap mount hinge with1/2" overlay with multiple adjustment.

O. Shelf Clips: Clear positive locking design.

P. Wood Finish:
1. All items are to be factory finished before delivery.
2. Architectural Woodwork Standards Premium Grade.
3. AWS finish system 5, Conversion Varnish

Q. Cabinet and Door Interface Style: 1/2" vertical overlay; 3/4" horizontal overlay; 13/32" maximum overlay for sliding pivot doors.

R. Sliding Door Track and Hinge: Knape and Vogt 8081 Pivot Door Slide with 8080HKEZL Overlay Hinge

S. Joint Sealant: Mildew-resistant one-component silicone as specified in Section 07 90 00 Joint Sealers. Color: Clear unless specified otherwise.

T. Fillers and Molding: Use scribe mould and fillers to assure accurate job fit.
1. Molding and Fillers: Outside corners, scribes, and trim molding.
2. Fillers: Include corner base fillers, base fillers, and wall fillers.
3. Cove Molding: Hardwood.
4. Finish: Match cabinet finish.

2.3 FABRICATION:

A. Shop-assemble casework for delivery to site in units easily handled and to permit passage through building openings.

B. Fabricate corners and joints without gaps or inaccessible spaces or areas where dirt or moisture could accumulate.

C. Fabricate each unit rigid, not dependent on building structure or adjacent units for rigidity.

D. Form edges smooth.

E. Provide cutouts for plumbing fixtures, appliances, fixtures and fittings where located on Drawings. Seal contact surfaces of all cut edges.

F. When necessary to cut and fit on site, furnish materials with ample allowance for cutting. Furnish trim to match adjacent surface for scribing and site cutting where indicated on shop drawings only.

G. Drawers shall meet the requirements of the American Woodwork Standards for the Grade or Grades specified.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 31 13 - Coordination and Meetings: Coordination and project conditions.

B. Verify the adequacy and proper location of any required backing or support framing.

C. Verify concealed backing is in proper location. Verify location of mechanical, electrical, and plumbing rough-ins to assure proper match with installed equipment.

D. The installer shall examine the jobsite and the conditions under which the work under this Section is to be performed and notify the Contractor, in wiring, of unsatisfactory conditions. Beginning of installation means the installer accepts existing conditions.

3.2 INSTALLATION

A. Install casework, components and accessories.

B. Use anchoring devices to suit conditions and substrate materials encountered.

C. Set casework items plumb and square, securely anchored to building structure.

D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Use filler strips; not additional overlay trim for this purpose.

E. Close ends of units, backsplashes, shelves and bases.

F. Install cabinets without distortion so doors and drawers fit openings and are aligned. Complete installation of hardware and accessories as indicated.

G. Install cabinets and countertop level and plumb to a tolerance of 1/8 inch in 8 feet.

H. Fasten cabinets to adjacent units and to backing.
1. Fasten wall cabinets through back, near top and bottom, at ends and not less than 24 inches o.c. with No. 10 wafer-head screws sized for 1-inch penetration into framing, blocking, or hanging strips.

I. Provide clear sealant between work of this Section to abutting work.

3.3 ADJUSTING

A. Section 01 77 00 - Contract Closeout: Testing, adjusting, and balancing.

B. Adjust doors, drawers, fixtures, hardware, and other moving or operating parts so doors and drawers are centered in openings and operate smoothly without warp or bind. Lubricate operating hardware as recommended by manufacturer.

C. All nicks, chips and scratches in the finish shall be filled and retouched per plastic laminate manufacturer's recommendations. Damaged items which cannot be repaired shall be replaced at no additional cost to the Owner.

3.4 CLEANING

A. Section 01 77 00 - Contract Closeout: Final cleaning.

B. Upon completion of installation or refurbishment, the installer shall clean all installed items of pencil and ink marks, and broom clean his area of operation, depositing debris in containers provided by the General Contractor.

C. Touch-up factory-applied finishes to restore damaged or soiled areas per manufacturer's instructions so as to not void warranty.

D. Advise Contractor of procedures and precautions for protection of casework and tops from damage by other Trades until acceptance of work by Owner and Architect.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 01 77 00 - Contract Closeout: Protecting installed construction.

B. Do not permit finished casework to be exposed to continued construction activity.

C. Manufacturer / installer to advise Contractor of procedures and precautions for protection of casework and tops from damage by other Trades until acceptance of the work by the Owner and Architect.

END OF SECTION

SECTION 12 36 23

PLASTIC LAMINATE COUNTERTOPS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Countertops for unit kitchen and vanity.

B. Preparation for installing utilities.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 06 10 00 - Rough Carpentry.

C. Section 06 20 00 - Finish Carpentry.

D. Section 07 90 00 - Joint Sealers.

E. Section 09 90 00 - Painting and Coating.

F. Section 11 31 00 - Residential Appliances.

G. Section 12 35 30 - Residential Casework.

H. Section 22 40 00 - Plumbing Fixtures.

I. Section 26 00 10 - General Electrical Requirements.

1.3 REFERENCES

A. Architectural Woodwork Standards, latest edition.

B. ANSI Z34.1 - Third-Party Certification Programs for Products, Processes, and Services.

C. FS MM-L-736 - Lumber, Hardwood.

D. FS MMM-A-130 - Adhesive, Contact.

E. National Electric Manufacturers Association (NEMA) LD3 - High Pressure Decorative Laminates.

F. PS 51 - Hardware and Decorative Plywood.

G. PS 58 - Basic Hardwood.

H. ADA Guidelines.

I. HUD Minimum Property Standards for Housing, latest edition.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00

B. Shop Drawings:
1. Meet the requirements of AWS.
2. Indicate materials, component profiles and elevations, assembly methods, joint

details, fastening methods, accessory listings, hardware location, location of plumbing and electrical service connections, and schedule of finishes; 3/4" = 1'-0" scale for details and 1/4" = 1'-0" scale for plans and elevations.

3. Provide a Woodwork Institute Certified Compliance Label on the first page of the shop drawings.

C. Product Data: Manufacturer's catalog information with specifications and construction details for each product used.

D. Samples: Submit three (3) 2" x 3" minimum samples illustrating each scheduled finish and edging.

E. Digital Submittal: Submit one (1) CD containing a digital copy of all submittals submitted in hard copy format.

1.5 QUALITY ASSURANCE

A. Perform work in accordance with Architectural Woodwork Standards, Premium Grade.

B. Provide either Woodwork Institute Certificates and Labels or Architectural Woodwork Institute Certificates and labels.

1. Woodwork Institute Certified Compliance:
   a. Provide a Woodwork Institute Certificate of Compliance indicating the architectural woodwork products being supplied and certifying that those products meet the requirements of the Architectural Woodwork Standards and of the plans and specifications.
   b. Provide a Woodwork Institute Certified Compliance label on each elevation of casework and on each laminated plastic countertop.
   c. On substantial completion provide a Woodwork Institute Certificate of Compliance certificate certifying that installation of architectural woodwork products meets the requirements of the AWS.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products to site under provisions of Section 01 60 00 - Material and Equipment.

B. Protect units from moisture damage.

C. Deliver laminate clad countertops only after wet operations in building are completed.

D. Store completed laminate clad countertops in a ventilated place, protected from the weather, with relative humidity range of 20% to 50%.

E. Protect finished surfaces from soiling and damage during handling and installation. Keep covered with a protective covering.

1.9 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

1.10 COORDINATION

A. Coordinate work under provisions of Section 01 31 13 - Coordination and Meetings.

B. Material supplier shall attend Pre-Installation Meeting with General Contractor to coordinate delivery and installation.

C. Coordinate the work with plumbing and electrical rough-in.

1.11 WARRANTY

A. Section 01 78 36 - Contract Closeout: Product warranties.

B. All materials and workmanship will carry a five (5) year warranty.

PART 2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

A. A Licensee of the Woodwork Institute Certified Compliance Program, or an Accredited Participant in the AWI Quality Certification Program.

2.2 MATERIALS:

A. Composite wood and agrifiber products shall contain no added urea-formaldehyde resins.

C. Decorative Laminates:
1. High pressure decorative laminate HGS (.048), NEMA Test LD-3 - 2005.
2. High pressure decorative laminate HGP (.039), NEMA Test LD-3 - 2005.
3. High pressure decorative laminate VGS (.028), NEMA Test LD-3 - 2005.
4. High Pressure cabinet liner CLS (.020), NEMA Test LD-3 - 2005.
5. Melamine laminate tested to meet NEMA Test LD-3 - 2005.
6. High pressure backer BKH (.048), (.039), (.028), NEMA Test LD-3-2005.

C. Laminate Color Selection:
1. Colors as specified on Drawings, as selected from manufacturer's standard solid and pattern offering.

D. Metal Parts:
1. Countertop support brackets shall be as specified in Section 05 50 00, paragraph 3.5F. Legs and other metal parts shall be stainless steel.

2.3 FABRICATION:

A. Fabricate laminate clad countertops to dimensions, profiles, and details shown.

B. Countertops with Integral Backsplash:
1. Shall be 3/4" thick ANSI A208.1-1993, M-2 particleboard with HGS laminate, appropriate backer, with radius edges as detailed. Install over 3/4 inch thick wood frame at open counters as detailed and over 3/4 inch thick particleboard subtops at base cabinets.

C. Sidesplash:
1. Shall be same material as backsplash, with square internal intersections to backsplash and countertop surface.

D. Square Butt back and end splashes shall be deck mount.

## PART 3 EXECUTION

### 3.1 INSPECTION

A. The installer must examine the job-site and the conditions under which the work under this section is to be performed, and notify the contractor in writing of unsatisfactory conditions. Do not proceed with work under this section until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

### 3.2 PREPARATION

A. Condition laminate clad countertops to average prevailing humidity conditions in installation areas prior to installing.

B. Form seams using splines to align adjacent surfaces, and secure with glue and concealed clamping devices designed for this purpose.

C. Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.

D. Seal exposed edges including edges of openings in countertops with a coat of varnish.

E. Install countertops with no more than 1/8 inch in 96-inch sag, bow, or other variation from a straight line.

F. Caulk space between backsplash and wall with clear sealant as specified in Section 07 90 00 - Joint Sealers.

### 3.3 INSTALLATION

A. Install casework with factory-trained supervision authorized by manufacturer. Erect casework, plumb, level, true and straight with no distortions. Where laminate clad casework abuts other finished work, scribe and cut to accurate fit. Provide cutouts for sinks, lavatories, faucets, and accessories as shown on Drawings.

### 3.4 CLEANING AND PROTECTION

A. Repair or remove and replace defective work as directed upon completion of installation.

B. Clean surfaces, repair minor damage per plastic laminate manufacturer's recommendations. Replace other damaged parts or units.

C. Advise contractor of procedures and precautions for protection of casework and tops from damage by other trades until acceptance of the work by the owner.

END OF SECTION

SECTION 22 05 00

COMMON WORK RESULTS FOR PLUMBING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Piping materials and installation instructions common to most piping systems.
2. Transition fittings.
3. Dielectric fittings.
4. Mechanical sleeve seals.
5. Sleeves.
6. Escutcheons.
7. Plumbing demolition.
8. Equipment installation requirements common to equipment sections.
9. Painting and finishing.
10. Supports and anchorages.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, pipe chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and mechanical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

F. The following are industry abbreviations for plastic materials:

1. ABS: Acrylonitrile-butadiene-styrene plastic.
2. CPVC: Chlorinated polyvinyl chloride plastic.
3. PE: Polyethylene plastic.
4. PVC: Polyvinyl chloride plastic.

G. The following are industry abbreviations for rubber materials:

1. EPDM: Ethylene-propylene-diene terpolymer rubber.
2. NBR: Acrylonitrile-butadiene rubber.

## 1.4 SUBMITTALS

A. Product Data: For the following:

1. Transition fittings.
2. Dielectric fittings.
3. Mechanical sleeve seals.
4. Escutcheons.

## 1.5 QUALITY ASSURANCE

A. Electrical Characteristics for Plumbing Equipment: Equipment of higher electrical characteristics may be furnished provided such proposed equipment is approved in writing and connecting electrical services, circuit breakers, and conduit sizes are appropriately modified. If minimum energy ratings or efficiencies are specified, equipment shall comply with requirements.

## 1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.

B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

## 1.7 COORDINATION

A. Arrange for pipe spaces, chases, slots, and openings in building structure during progress of construction, to allow for plumbing installations.

B. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.

C. Coordinate requirements for access panels and doors for plumbing items requiring access that are concealed behind finished surfaces. Access panels and doors are specified in Division 08 Section "Access Doors and Frames."

# PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

2.2 PIPE, TUBE, AND FITTINGS

A. Refer to individual Division 22 piping Sections for pipe, tube, and fitting materials and joining methods.

B. Pipe Threads: ASME B1.20.1 for factory-threaded pipe and pipe fittings.

2.3 JOINING MATERIALS

A. Refer to individual Division 22 piping Sections for special joining materials not listed below.

B. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

D. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for general-duty brazing, unless otherwise indicated; and AWS A5.8, BAg1, silver alloy for refrigerant piping, unless otherwise indicated.

E. Solvent Cements for Joining Plastic Piping:

1. ABS Piping: ASTM D 2235.
2. CPVC Piping: ASTM F 493.
3. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
4. PVC to ABS Piping Transition: ASTM D 3138.

2.4 TRANSITION FITTINGS

A. AWWA Transition Couplings: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

1. Manufacturers:

a. Cascade Waterworks Mfg. Co.
b. Dresser Industries, Inc.; DMD Div.
c. Ford Meter Box Company, Incorporated (The); Pipe Products Div.
d. JCM Industries.
e. Smith-Blair, Inc.
f. Viking Johnson.

2. Underground Piping NPS 1-1/2 and Smaller: Manufactured fitting or coupling.
3. Underground Piping NPS 2 and Larger: AWWA C219, metal sleeve-type coupling.
4. Aboveground Pressure Piping: Pipe fitting.

B. Plastic-to-Metal Transition Fittings: CPVC, PVC, CPVC and PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.

1. Manufacturers:

a. Eslon Thermoplastics.

C. Plastic-to-Metal Transition Adaptors: One-piece fitting with manufacturer's SDR 11 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.

1. Manufacturers:

a. Thompson Plastics, Inc.

D. Plastic-to-Metal Transition Unions: MSS SP-107, CPVC, PVC, CPVC and PVC four-part union. Include brass end, solvent-cement-joint end, rubber O-ring, and union nut.

1. Manufacturers:

a. NIBCO INC.
b. NIBCO, Inc.; Chemtrol Div.

E. Flexible Transition Couplings for Underground Nonpressure Drainage Piping: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.

1. Manufacturers:

a. Cascade Waterworks Mfg. Co.
b. Fernco, Inc.
c. Mission Rubber Company.
d. Plastic Oddities, Inc.

## 2.5 DIELECTRIC FITTINGS

A. Description: Combination fitting of copper alloy and ferrous materials with threaded, solder-joint, plain, or weld-neck end connections that match piping system materials.

B. Insulating Material: Suitable for system fluid, pressure, and temperature.

A. Dielectric Unions: Factory-fabricated, union assembly, for 250-psig minimum working pressure at 180 deg F.

1. Manufacturers:

a. Capitol Manufacturing Co.
b. Central Plastics Company.
c. Eclipse, Inc.
d. Epco Sales, Inc.
e. Hart Industries, International, Inc.
f. Watts Industries, Inc.; Water Products Div.
g. Zurn Industries, Inc.; Wilkins Div.

B. Dielectric-Flange Kits: Companion-flange assembly for field assembly. Include flanges, full-face- or ring-type neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.

1. Manufacturers:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Central Plastics Company.
d. Pipeline Seal and Insulator, Inc.

2. Separate companion flanges and steel bolts and nuts shall have 150- or 300-psig minimum working pressure where required to suit system pressures.

C. Dielectric Couplings: Galvanized-steel coupling with inert and noncorrosive, thermoplastic lining; threaded ends; and 300-psig minimum working pressure at 225 deg F.

1. Manufacturers:

a. Calpico, Inc.
b. Lochinvar Corp.

D. Dielectric Nipples: Electroplated steel nipple with inert and noncorrosive, thermoplastic lining; plain, threaded, or grooved ends; and 300-psig minimum working pressure at 225 deg F.

1. Manufacturers:

a. Perfection Corp.
b. Precision Plumbing Products, Inc.
c. Sioux Chief Manufacturing Co., Inc.
d. Victaulic Co. of America.

## 2.6 MECHANICAL SLEEVE SEALS

A. Description: Modular sealing element unit, designed for field assembly, to fill annular space between pipe and sleeve.

1. Manufacturers:

a. Advance Products & Systems, Inc.
b. Calpico, Inc.
c. Metraflex Co.
d. Pipeline Seal and Insulator, Inc.

2. Sealing Elements: EPDM interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.
3. Pressure Plates: Plastic, carbon steel, stainless steel. Include two for each sealing element.
4. Connecting Bolts and Nuts: Carbon steel with corrosion-resistant coating or Stainless steel of length required to secure pressure plates to sealing elements. Include one for each sealing element.

## 2.7 SLEEVES

A. Galvanized-Steel Sheet thickness; round tube closed with welded longitudinal joint. : 0.0239-inch minimum

B. Steel Pipe: ASTM A 53, Type E, Grade B, Schedule 40, galvanized, plain ends.

C. Cast Iron: Cast or fabricated "wall pipe" equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.

D. Stack Sleeve Fittings: Manufactured, cast-iron sleeve with integral clamping flange. Include clamping ring and bolts and nuts for membrane flashing.

1. Underdeck Clamp: Clamping ring with set screws.

E. Molded PVC: Permanent, with nailing flange for attaching to wooden forms.

F. PVC Pipe: ASTM D 1785, Schedule 40.

G. Molded PE: Reusable, PE, tapered-cup shaped, and smooth-outer surface with nailing flange for attaching to wooden forms.

2.8 ESCUTCHEONS

A. Description: Manufactured wall and ceiling escutcheons and floor plates, with an ID to closely fit around pipe, tube, and insulation of insulated piping and an OD that completely covers opening.

B. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped brass with polished chrome-plated finish.

C. One-Piece, Cast-Brass Type: With set screw.

1. Finish: Polished chrome-plated.

D. Split-Casting, Cast-Brass Type: With concealed hinge and set screw.

1. Finish: Polished chrome-plated.

E. One-Piece, Stamped-Steel Type: With set screw and chrome-plated finish.

F. Split-Plate, Stamped-Steel Type: With concealed hinge, set screw and chrome-plated finish.

G. One-Piece, Floor-Plate Type: Cast-iron floor plate.

H. Split-Casting, Floor-Plate Type: Cast brass with concealed hinge and set screw.

PART 3 - EXECUTION

3.1 PLUMBING DEMOLITION

A. Refer to Division 01 Section "Cutting and Patching" and Division 02 Section "Selective Structure Demolition" for general demolition requirements and procedures.

B. Disconnect, demolish, and remove plumbing systems, equipment, and components indicated to be removed.

1. Piping to Be Removed: Remove portion of piping indicated to be removed and cap or plug remaining piping with same or compatible piping material.
2. Piping to Be Abandoned in Place: Drain piping and cap or plug piping with same or compatible piping material.
3. Equipment to Be Removed: Disconnect and cap services and remove equipment.
4. Equipment to Be Removed and Reinstalled: Disconnect and cap services and remove, clean, and store equipment; when appropriate, reinstall, reconnect, and make equipment operational.
5. Equipment to Be Removed and Salvaged: Disconnect and cap services and remove equipment and deliver to Owner.

C. If pipe, insulation, or equipment to remain is damaged in appearance or is unserviceable, remove damaged or unserviceable portions and replace with new products of equal capacity and quality.

3.2 PIPING SYSTEMS - COMMON REQUIREMENTS

A. Install piping according to the following requirements and Division 22 Sections specifying piping systems.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.

D. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

E. Install piping to permit valve servicing.

F. Install piping at indicated slopes.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install piping to allow application of insulation.

J. Select system components with pressure rating equal to or greater than system operating pressure.

K. Install escutcheons for penetrations of walls, ceilings, and floors according to the following:

1. New Piping:

a. Piping with Fitting or Sleeve Protruding from Wall: One-piece, deep-pattern type.
b. Chrome-Plated Piping: One-piece, cast-brass type with polished chrome-plated finish.
c. Insulated Piping: One-piece, stamped-steel type with spring clips.
d. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, cast-brass type with polished chrome-plated finish.
e. Bare Piping at Wall and Floor Penetrations in Finished Spaces: One-piece, stamped-steel type.
f. Bare Piping in Equipment Rooms: One-piece, cast-brass type.
g. Bare Piping at Floor Penetrations in Equipment Rooms: One-piece, floor-plate type.

L. Sleeves are not required for core-drilled holes.

M. Permanent sleeves are not required for holes formed by removable PE sleeves.

N. Install sleeves for pipes passing through concrete and masonry walls and concrete floor and roof slabs.

O. Install sleeves or knock-outs in floor area for pipes passing through concrete floor slabs.

1. Cut sleeves to length for mounting flush with both surfaces.

a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas 2 inches above finished floor level. Extend cast-iron sleeve fittings below floor slab as required to secure clamping ring if ring is specified.

P. Verify final equipment locations for roughing-in.

Q. Refer to equipment specifications in other Sections of these Specifications for roughing-in requirements.

## 3.3 PIPING JOINT CONSTRUCTION

A. Join pipe and fittings according to the following requirements and Division 22 Sections specifying piping systems.

B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

D. Soldered Joints: Apply ASTM B 813, water-flushable flux, unless otherwise indicated, to tube end. Construct joints according to ASTM B 828 or CDA's "Copper Tube Handbook," using lead-free solder alloy complying with ASTM B 32.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.

F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

G. Plastic Piping Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. ABS Piping: Join according to ASTM D 2235 and ASTM D 2661 Appendixes.
3. CPVC Piping: Join according to ASTM D 2846/D 2846M Appendix.
4. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
5. PVC Nonpressure Piping: Join according to ASTM D 2855.
6. PVC to ABS Nonpressure Transition Fittings: Join according to ASTM D 3138 Appendix.

H. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.

I. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

## 3.4 PIPING CONNECTIONS

A. Make connections according to the following, unless otherwise indicated:

1. Install unions, in piping NPS 2 and smaller, adjacent to each valve and at final connection to each piece of equipment.
2. Install flanges, in piping NPS 2-1/2 and larger, adjacent to flanged valves and at final connection to each piece of equipment.
3. Dry Piping Systems: Install dielectric unions and flanges to connect piping materials of dissimilar metals.
4. Wet Piping Systems: Install dielectric coupling and nipple fittings to connect piping materials of dissimilar metals.

## 3.5 EQUIPMENT INSTALLATION - COMMON REQUIREMENTS

A. Install equipment to allow maximum possible headroom unless specific mounting heights are not indicated.

B. Install equipment level and plumb, parallel and perpendicular to other building systems and components in exposed interior spaces, unless otherwise indicated.

C. Install plumbing equipment to facilitate service, maintenance, and repair or replacement of components. Connect equipment for ease of disconnecting, with minimum interference to other installations. Extend grease fittings to accessible locations.

D. Install equipment to allow right of way for piping installed at required slope.

## 3.6 PAINTING

A. Painting of plumbing systems, equipment, and components is specified in Division 09 Sections "Interior Painting" and "Exterior Painting."

B. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

## 3.7 ERECTION OF METAL SUPPORTS AND ANCHORAGES

A. Refer to Division 05 Section "Metal Fabrications" for structural steel.

B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor plumbing materials and equipment.

END OF SECTION

SECTION 22 05 23

GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Brass ball valves.
2. Bronze ball valves.
3. Bronze swing check valves.

B. Related Sections:

1. Division 22 Section "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

1.3 DEFINITIONS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene copolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

1.4 SUBMITTALS

A. Product Data: For each type of valve indicated.

1.5 QUALITY ASSURANCE

A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.

B. ASME Compliance:

1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
2. ASME B31.1 for power piping valves.

C. NSF Compliance: NSF 61 for valve materials for potable-water service.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Protect internal parts against rust and corrosion.
2. Protect threads, flange faces, grooves, and weld ends.
3. Set ball valves open to minimize exposure of functional surfaces.
4. Block check valves in either closed or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection.
2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

A. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

B. Valve Sizes: Same as upstream piping unless otherwise indicated.

C. Valve Actuator Types:

1. Handlever: For quarter-turn valves NPS 6 and smaller except plug valves.

D. Valves in Insulated Piping: With 2-inch stem extensions and the following features:

1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation.

E. Valve-End Connections:

1. Solder Joint: With sockets according to ASME B16.18.
2. Threaded: With threads according to ASME B1.20.1.

F. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRASS BALL VALVES

A. Two-Piece, Full-Port, Brass Ball Valves with Brass Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Hammond Valve.
   b. Jomar International, LTD.
   c. Kitz Corporation.
   d. Legend Valve.
   e. Milwaukee Valve Company.
   f. NIBCO INC.
   g. Red-White Valve Corporation.

2. Description:

a. Standard: MSS SP-110.
b. SWP Rating: 150 psig.
c. CWP Rating: 600 psig.
d. Body Design: Two piece.
e. Body Material: Forged brass.
f. Ends: Threaded.
g. Seats: PTFE or TFE.
h. Stem: Brass.
i. Ball: Chrome-plated brass.
j. Port: Full.

B. Two-Piece, Regular-Port, Brass Ball Valves with Brass Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Hammond Valve.
b. Jamesbury; a subsidiary of Metso Automation.
c. Legend Valve.
d. Marwin Valve; a division of Richards Industries.
e. Milwaukee Valve Company.

2. Description:

a. Standard: MSS SP-110.
b. SWP Rating: 150 psig.
c. CWP Rating: 600 psig.
d. Body Design: Two piece.
e. Body Material: Forged brass.
f. Ends: Threaded.
g. Seats: PTFE or TFE.
h. Stem: Brass.
i. Ball: Chrome-plated brass.
j. Port: Regular.

## 2.3 BRONZE BALL VALVES

A. One-Piece, Reduced-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.
b. Conbraco Industries, Inc.; Apollo Valves.
c. NIBCO INC.

2. Description:

a. Standard: MSS SP-110.
b. CWP Rating: 400 psig.
c. Body Design: One piece.
d. Body Material: Bronze.
e. Ends: Threaded.
f. Seats: PTFE or TFE.

g. Stem: Bronze.
h. Ball: Chrome-plated brass.
i. Port: Reduced.

B. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.
b. Conbraco Industries, Inc.; Apollo Valves.
c. Crane Co.; Crane Valve Group; Crane Valves.
d. Hammond Valve.
e. Lance Valves; a division of Advanced Thermal Systems, Inc.
f. Legend Valve.
g. Milwaukee Valve Company.
h. NIBCO INC.
i. Red-White Valve Corporation.
j. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

a. Standard: MSS SP-110.
b. SWP Rating: 150 psig.
c. CWP Rating: 600 psig.
d. Body Design: Two piece.
e. Body Material: Bronze.
f. Ends: Threaded.
g. Seats: PTFE or TFE.
h. Stem: Bronze.
i. Ball: Chrome-plated brass.
j. Port: Full.

C. Two-Piece, Regular-Port, Bronze Ball Valves with Bronze Trim:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.
b. Conbraco Industries, Inc.; Apollo Valves.
c. Crane Co.; Crane Valve Group; Stockham Division.
d. Hammond Valve.
e. Milwaukee Valve Company.
f. NIBCO INC.

2. Description:

a. Standard: MSS SP-110.
b. SWP Rating: 150 psig.
c. CWP Rating: 600 psig.
d. Body Design: Two piece.
e. Body Material: Bronze.
f. Ends: Threaded.
g. Seats: PTFE or TFE.
h. Stem: Bronze.
i. Ball: Chrome-plated brass.
j. Port: Regular.

2.4 BRONZE SWING CHECK VALVES

A. Class 125, Bronze Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.
b. Crane Co.; Crane Valve Group; Stockham Division.
c. Hammond Valve.
d. Kitz Corporation.
e. Milwaukee Valve Company.
f. NIBCO INC.
g. Powell Valves.
h. Red-White Valve Corporation.
i. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

a. Standard: MSS SP-80, Type 3.
b. CWP Rating: 200 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B 62, bronze.
e. Ends: Threaded.
f. Disc: Bronze.

B. Class 125, Bronze Swing Check Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Stockham Division.
b. Hammond Valve.
c. Kitz Corporation.
d. Milwaukee Valve Company.
e. NIBCO INC.
f. Red-White Valve Corporation.
g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

a. Standard: MSS SP-80, Type 4.
b. CWP Rating: 200 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B 62, bronze.
e. Ends: Threaded.
f. Disc: PTFE or TFE.

C. Class 150, Bronze Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. American Valve, Inc.
b. Crane Co.; Crane Valve Group; Stockham Division.
c. Kitz Corporation.
d. Milwaukee Valve Company.

e. NIBCO INC.
f. Red-White Valve Corporation.
g. Zy-Tech Global Industries, Inc.

2. Description:

a. Standard: MSS SP-80, Type 3.
b. CWP Rating: 300 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B 62, bronze.
e. Ends: Threaded.
f. Disc: Bronze.

D. Class 150, Bronze Swing Check Valves with Nonmetallic Disc:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Crane Co.; Crane Valve Group; Jenkins Valves.
b. Hammond Valve.
c. Milwaukee Valve Company.
d. NIBCO INC.
e. Watts Regulator Co.; a division of Watts Water Technologies, Inc.

2. Description:

a. Standard: MSS SP-80, Type 4.
b. CWP Rating: 300 psig.
c. Body Design: Horizontal flow.
d. Body Material: ASTM B 62, bronze.
e. Ends: Threaded.
f. Disc: PTFE or TFE.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Do not attempt to repair defective valves; replace with new valves.

### 3.2 VALVE INSTALLATION

A. Install valves with unions at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.

B. Locate valves for easy access and provide separate support where necessary.

C. Install valves in horizontal piping with stem at or above center of pipe.

D. Install valves in position to allow full stem movement.

E. Install check valves for proper direction of flow and as follows:

1. Swing Check Valves: In horizontal position with hinge pin level.

## 3.3 ADJUSTING

A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

## 3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:

1. Shutoff Service: Ball valves.

B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Select valves, except wafer types, with the following end connections:

1. For Copper Tubing, NPS 2 and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
2. For Copper Tubing, NPS 2-1/2 to NPS 4: Flanged ends except where threaded valve-end option is indicated in valve schedules below.

## 3.5 DOMESTIC, HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 and Smaller:

1. Bronze and Brass Valves: May be provided with solder-joint ends instead of threaded ends.
2. Ball Valves: One Piece, full Port, brass with brass trim.
3. Bronze Swing Check Valves: Class 125 bronze disc.

END OF SECTION

SECTION 22 05 29

HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following hangers and supports for plumbing system piping and equipment:

1. Steel pipe hangers and supports.
2. Metal framing systems.
3. Fastener systems.
4. Pipe positioning systems.
5. Equipment supports.

B. Related Sections include the following:

1. Division 05 Section "Metal Fabrications" for structural-steel shapes and plates for trapeze hangers for pipe and equipment supports.
2. Division 21 Section "Water-Based Fire-Suppression Systems" for pipe hangers for fire-suppression piping.

1.3 DEFINITIONS

A. MSS: Manufacturers Standardization Society for The Valve and Fittings Industry Inc.

B. Terminology: As defined in MSS SP-90, "Guidelines on Terminology for Pipe Hangers and Supports."

1.4 PERFORMANCE REQUIREMENTS

A. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Steel pipe hangers and supports.
2. Powder-actuated fastener systems.
3. Pipe positioning systems.

B. Shop Drawings: Show fabrication and installation details and include calculations for the following:

1. Metal framing systems. Include Product Data for components.
2. Equipment supports.

C. Welding certificates.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

### 2.2 STEEL PIPE HANGERS AND SUPPORTS

A. Description: MSS SP-58, Types 1 through 58, factory-fabricated components. Refer to Part 3 "Hanger and Support Applications" Article for where to use specific hanger and support types.

B. Manufacturers:

1. AAA Technology & Specialties Co., Inc.
2. Bergen-Power Pipe Supports.
3. B-Line Systems, Inc.; a division of Cooper Industries.
4. Carpenter & Paterson, Inc.
5. Empire Industries, Inc.
6. ERICO/Michigan Hanger Co.
7. Globe Pipe Hanger Products, Inc.
8. Grinnell Corp.
9. GS Metals Corp.
10. National Pipe Hanger Corporation.
11. PHD Manufacturing, Inc.
12. PHS Industries, Inc.
13. Piping Technology & Products, Inc.
14. Tolco Inc.

C. Galvanized, Metallic Coatings: Pregalvanized or hot dipped.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

E. Padded Hangers: Hanger with fiberglass or other pipe insulation pad or cushion for support of bearing surface of piping.

### 2.3 METAL FRAMING SYSTEMS

A. Description: MFMA-3, shop- or field-fabricated pipe-support assembly made of steel channels and other components.

B. Manufacturers:

1. B-Line Systems, Inc.; a division of Cooper Industries.

2. ERICO/Michigan Hanger Co.; ERISTRUT Div.
3. GS Metals Corp.
4. Power-Strut Div.; Tyco International, Ltd.
5. Thomas & Betts Corporation.
6. Tolco Inc.
7. Unistrut Corp.; Tyco International, Ltd.

C. Coatings: Manufacturer's standard finish unless bare metal surfaces are indicated.

D. Nonmetallic Coatings: Plastic coating, jacket, or liner.

## 2.4 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Manufacturers:

a. Hilti, Inc.
b. ITW Ramset/Red Head.
c. Masterset Fastening Systems, Inc.
d. MKT Fastening, LLC.
e. Powers Fasteners.

B. Mechanical-Expansion Anchors: Insert-wedge-type zinc-coated steel, for use in hardened portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

1. Manufacturers:

a. B-Line Systems, Inc.; a division of Cooper Industries.
b. Empire Industries, Inc.
c. Hilti, Inc.
d. ITW Ramset/Red Head.
e. MKT Fastening, LLC.
f. Powers Fasteners.

## 2.5 PIPE POSITIONING SYSTEMS

A. Description: IAPMO PS 42, system of metal brackets, clips, and straps for positioning piping in pipe spaces for plumbing fixtures for commercial applications.

B. Manufacturers:

1. C & S Mfg. Corp.
2. HOLDRITE Corp.; Hubbard Enterprises.
3. Samco Stamping, Inc.

## 2.6 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural-steel shapes.

2.7 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, nonshrink and nonmetallic grout; suitable for interior and exterior applications.

1. Properties: Nonstaining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi, 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT APPLICATIONS

A. Specific hanger and support requirements are specified in Sections specifying piping systems and equipment.

B. Comply with MSS SP-69 for pipe hanger selections and applications that are not specified in piping system Sections.

C. Use hangers and supports with galvanized, metallic coatings for piping and equipment that will not have field-applied finish.

D. Use nonmetallic coatings on attachments for electrolytic protection where attachments are in direct contact with copper tubing.

E. Horizontal-Piping Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Adjustable, Steel Clevis Hangers (MSS Type 1): For suspension of noninsulated or insulated stationary pipes, NPS 1/2 to NPS 30.
2. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes, NPS 3/4 to NPS 24, requiring clamp flexibility and up to 4 inches of insulation.
3. Steel Pipe Clamps (MSS Type 4): For suspension of cold and hot pipes, NPS 1/2 to NPS 24, if little or no insulation is required.
4. Pipe Hangers (MSS Type 5): For suspension of pipes, NPS 1/2 to NPS 4, to allow off-center closure for hanger installation before pipe erection.
5. Adjustable, Swivel Split- or Solid-Ring Hangers (MSS Type 6): For suspension of noninsulated stationary pipes, NPS 3/4 to NPS 8.
6. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
7. Adjustable Band Hangers (MSS Type 9): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 8.
8. Adjustable, Swivel-Ring Band Hangers (MSS Type 10): For suspension of noninsulated stationary pipes, NPS 1/2 to NPS 2.
9. Split Pipe-Ring with or without Turnbuckle-Adjustment Hangers (MSS Type 11): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 8.
10. Extension Hinged or 2-Bolt Split Pipe Clamps (MSS Type 12): For suspension of noninsulated stationary pipes, NPS 3/8 to NPS 3.
11. U-Bolts (MSS Type 24): For support of heavy pipes, NPS 1/2 to NPS 30.
12. Clips (MSS Type 26): For support of insulated pipes not subject to expansion or contraction.

F. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F piping installations.
3. Swivel Turnbuckles (MSS Type 15): For use with MSS Type 11, split pipe rings.
4. Malleable-Iron Sockets (MSS Type 16): For attaching hanger rods to various types of building attachments.
5. Steel Weldless Eye Nuts (MSS Type 17): For 120 to 450 deg F piping installations.

G. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Horizontal Travelers (MSS Type 58): For supporting piping systems subject to linear horizontal movement where headroom is limited.

H. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:

1. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
2. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

I. Comply with MFMA-102 for metal framing system selections and applications that are not specified in piping system Sections.

J. Use mechanical-expansion anchors instead of building attachments where required in concrete construction.

K. Use pipe positioning systems in pipe spaces behind plumbing fixtures to support supply and waste piping for plumbing fixtures.

## 3.2 HANGER AND SUPPORT INSTALLATION

A. Steel Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure.

B. Trapeze Pipe Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping and support together on field-fabricated trapeze pipe hangers.

1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D1.1.

C. Metal Framing System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled metal framing systems.

D. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

E. Fastener System Installation:

1. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

F. Pipe Positioning System Installation: Install support devices to make rigid supply and waste piping connections to each plumbing fixture. Refer to Division 22 Section "Plumbing Fixtures" for plumbing fixtures.

G. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.

H. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

I. Install lateral bracing with pipe hangers and supports to prevent swaying.

J. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9 (for building services piping) are not exceeded.

K. Insulated Piping: Comply with the following:

1. Attach clamps and spacers to piping.

    a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
    b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
    c. Do not exceed pipe stress limits according to ASME B31.9 for building services piping.

2. Install MSS SP-58, Type 39, protection saddles if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.

    a. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 and larger if pipe is installed on rollers.

3. Install MSS SP-58, Type 40, protective shields on cold piping with vapor barrier. Shields shall span an arc of 180 degrees.

4. Shield Dimensions for Pipe: Not less than the following:

    a. NPS 1/4 to NPS 3-1/2: 12 inches long and 0.048 inch thick.

5. Insert Material: Length at least as long as protective shield.
6. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

## 3.3 EQUIPMENT SUPPORTS

A. Fabricate structural-steel stands to suspend equipment from structure overhead or to support equipment above floor.

B. Provide lateral bracing, to prevent swaying, for equipment supports.

## 3.4 METAL FABRICATIONS

A. Cut, drill, and fit miscellaneous metal fabrications for trapeze pipe hangers.

B. Fit exposed connections together to form hairline joints. Field weld connections that cannot be shop welded because of shipping size limitations.

C. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.
4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

## 3.5 ADJUSTING

A. Hanger Adjustments: Adjust hangers to distribute loads equally on attachments and to achieve indicated slope of pipe.

B. Trim excess length of continuous-thread hanger and support rods to 1-1/2 inches.

## 3.6 PAINTING

A. Touch Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Touch Up: Cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal are specified in Division 09 painting Sections.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

SECTION 22 05 53

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Pipe labels.
3. Valve tags.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples: For color, letter style, and graphic representation required for each identification material and device.

C. Equipment Label Schedule: Include a listing of all equipment to be labeled with the proposed content for each label.

D. Valve numbering scheme.

E. Valve Schedules: For each piping system to include in maintenance manuals.

1.4 COORDINATION

A. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.

B. Coordinate installation of identifying devices with locations of access panels and doors.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: Black.

3. Background Color: White.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-fourths the size of principal lettering.
7. Fasteners: Stainless-steel rivets.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified.

C. Equipment Label Schedule: For each item of equipment to be labeled, on 8-1/2-by-11-inch bond paper. Tabulate equipment identification number and identify Drawing numbers where equipment is indicated (plans, details, and schedules), plus the Specification Section number and title where equipment is specified. Equipment schedule shall be included in operation and maintenance data.

## 2.2 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction.

B. Pre-tensioned Pipe Labels: Pre-coiled, semi-rigid plastic formed to partially cover circumference of pipe and to attach to pipe without fasteners or adhesive.

C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings, pipe size, and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions, or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1-1/2 inches high.

## 2.3 VALVE TAGS

A. Valve Tags: Stamped or engraved with 1/4-inch letters for piping system abbreviation and 1/2-inch numbers.

1. Tag Material: Brass, 0.032-inch minimum thickness, and having predrilled or stamped holes for attachment hardware.
2. Fasteners: Brass wire-link or beaded chain; or S-hook.

B. Valve Schedules: For each piping system, on 8-1/2-by-11-inch bond paper. Tabulate valve number, piping system, system abbreviation (as shown on valve tag), location of valve (room or space), normal-operating position (open, closed, or modulating), and variations for identification. Mark valves for emergency shutoff and similar special uses.

1. Valve-tag schedule shall be included in operation and maintenance data.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Piping Color-Coding: Painting of piping is specified in Division 09 Section "Interior Painting."

B. Locate pipe labels where piping is exposed:

1. Near each valve and control device.
2. Near major equipment items and other points of origination and termination.

C. Pipe Label Color Schedule:

1. Domestic Water Piping:

a. Background Color: Black
b. Letter Color: Blue

2. Sanitary Waste Piping:

a. Background Color: Black.
b. Letter Color: Yellow.

3.4 VALVE-TAG INSTALLATION

A. Install tags on valves and control devices in piping systems, except check valves; valves within factory-fabricated equipment units; shutoff valves; faucets; convenience and lawn-watering hose connections; and similar roughing-in connections of end-use fixtures and units. List tagged valves in a valve schedule.

B. Valve-Tag Application Schedule: Tag valves according to size, shape, and color scheme and with captions similar to those indicated in the following subparagraphs:

1. Valve-Tag Size and Shape:

a. Cold Water: 1-1/2 inches round.
b. Hot Water: 1-1/2 inches round.

2. Valve-Tag Color:

a. Cold Water: Green.
b. Hot Water: Red.

3. Letter Color:

a. Cold Water: White.
b. Hot Water: White.

END OF SECTION

SECTION 22 07 00

PLUMBING INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Insulation Materials:

a. Cellular glass.
b. Flexible elastomeric.
c. Mineral fiber.

2. Adhesives.
3. Mastics.
4. Sealants.
5. Factory-applied jackets.
6. Tapes.

7. Insulation."
8. Division 23 Section "HVAC Insulation."

1.3 SUBMITTALS

A. Product Data: For each type of product indicated. Include thermal conductivity, thickness, and jackets (both factory and field applied, if any).

B. LEED Submittal:

1. Product Data shall meet the criteria for Credit EQ 4.1: For adhesives and sealants, including printed statement of VOC content.

C. Qualification Data: For qualified Installer.

D. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Skilled mechanics who have successfully completed an apprenticeship program or another craft training program certified by the Department of Labor, Bureau of Apprenticeship and Training.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packaging: Insulation material containers shall be marked by manufacturer with appropriate ASTM standard designation, type and grade, and maximum use temperature.

1.6 COORDINATION

A. Coordinate size and location of supports, hangers, and insulation shields specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment."

B. Coordinate clearance requirements with piping Installer for piping insulation application and equipment Installer for equipment insulation application. Before preparing piping Shop Drawings, establish and maintain clearance requirements for installation of insulation and field-applied jackets and finishes and for space required for maintenance.

C. Coordinate installation and testing of heat tracing.

1.7 SCHEDULING

A. Schedule insulation application after pressure testing systems and, where required. Insulation application may begin on segments that have satisfactory test results.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in Part 3 schedule articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

E. Cellular Glass: Inorganic, incombustible, foamed or cellulated glass with annealed, rigid, hermetically sealed cells. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Products: Subject to compliance with requirements, provide the following:

   a. Cell-U-Foam Corporation; Ultra-CUF.
   b. Pittsburgh Corning Corporation; Foamglas Super K.

2. Block Insulation: ASTM C 552, Type I.
3. Special-Shaped Insulation: ASTM C 552, Type III.
4. Board Insulation: ASTM C 552, Type IV.
5. Preformed Pipe Insulation without Jacket: Comply with ASTM C 552, Type II, Class 1.
6. Preformed Pipe Insulation with Factory-Applied ASJ: Comply with ASTM C 552, Type II, Class 2.
7. Factory fabricate shapes according to ASTM C 450 and ASTM C 585.

F. Flexible Elastomeric: Closed-cell, sponge- or expanded-rubber materials. Comply with ASTM C 534, Type I for tubular materials and Type II for sheet materials.

1. Products: Subject to compliance with requirements, provide the following:

a. Aeroflex USA Inc.; Aerocel.
b. Armacell LLC; AP Armaflex.
c. RBX Corporation; Insul-Sheet 1800 and Insul-Tube 180.

G. Mineral-Fiber, Preformed Pipe Insulation:

1. Products: Subject to compliance with requirements, provide the following:

a. Fibrex Insulations Inc.; Coreplus 1200.
b. Johns Manville; Micro-Lok.
c. Knauf Insulation; 1000(Pipe Insulation.
d. Manson Insulation Inc.; Alley-K.
e. Owens Corning; Fiberglas Pipe Insulation. ASJ requires field-applied adhesive and staples. ASJ with SSL does not require field-applied adhesive and staples, resulting in reduced installation labor.

## 2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated, unless otherwise indicated.

B. Cellular-Glass, Phenolic, Polyisocyanurate, and Polystyrene Adhesive: Solvent-based resin adhesive, with a service temperature range of minus 75 to plus 300 deg F (minus 59 to plus 149 deg C).

1. Products: Subject to compliance with requirements, provide the following:

a. Childers Products, Division of ITW; CP-96.
b. Foster Products Corporation, H. B. Fuller Company; 81-33. Retain subparagraph below if low-emitting materials are required for LEED-NC Credit EQ 4.1.

2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

C. Flexible Elastomeric and Polyolefin Adhesive: Comply with MIL-A-24179A, Type II, Class I.

1. Products: Subject to compliance with requirements, provide the following:

a. Aeroflex USA Inc.; Aeroseal.
b. Armacell LCC; 520 Adhesive.
c. Foster Products Corporation, H. B. Fuller Company; 85-75.
d. RBX Corporation; Rubatex Contact Adhesive. Retain subparagraph below if low-emitting materials are required for LEED-NC Credit EQ 4.1.

2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

D. PVC Jacket Adhesive: Compatible with PVC jacket.

1. Products: Subject to compliance with requirements, provide the following:

a. Dow Chemical Company (The); 739, Dow Silicone.
b. Johns-Manville; Zeston Perma-Weld, CEEL-TITE Solvent Welding Adhesive.
c. P.I.C. Plastics, Inc.; Welding Adhesive.
d. Speedline Corporation; Speedline Vinyl Adhesive. Retain subparagraph below if low-emitting materials are required for LEED-NC Credit EQ 4.1.

2. For indoor applications, use adhesive that has a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.3 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-C-19565C, Type II.

1. For indoor applications, use mastics that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. Vapor-Barrier Mastic: Water based; suitable for indoor and outdoor use on below ambient services.

1. Products: Subject to compliance with requirements, provide the following:

a. Childers Products, Division of ITW; CP-35.
b. Foster Products Corporation, H. B. Fuller Company; 30-90.
c. ITW TACC, Division of Illinois Tool Works; CB-50.
d. Marathon Industries, Inc.; 590.
e. Mon-Eco Industries, Inc.; 55-40.
f. Vimasco Corporation; 749.

2. Water-Vapor Permeance: ASTM E 96, Procedure B, 0.013 perm 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 59 percent by volume and 71 percent by weight.
5. Color: White.

## 2.4 SEALANTS

A. Joint Sealants:

1. Joint Sealants for Cellular-Glass, Phenolic, and Polyisocyanurate Products: Subject to compliance with requirements, provide the following:

a. Childers Products, Division of ITW; CP-76.
b. Foster Products Corporation, H. B. Fuller Company; 30-45.
c. Marathon Industries, Inc.; 405.
d. Mon-Eco Industries, Inc.; 44-05.
e. Pittsburgh Corning Corporation; Pittseal 444.
f. Vimasco Corporation; 750.

2. Joint Sealants for Polystyrene Products: Subject to compliance with requirements, provide the following:

a. Childers Products, Division of ITW; CP-70.
b. Foster Products Corporation, H. B. Fuller Company; 30-45/30-46.
c. Marathon Industries, Inc.; 405.

d. Mon-Eco Industries, Inc.; 44-05.
e. Vimasco Corporation; 750.

3. Materials shall be compatible with insulation materials, jackets, and substrates.
4. Permanently flexible, elastomeric sealant.
5. Service Temperature Range: Minus 100 to plus 300 deg F.
6. Color: White or gray.
7. For indoor applications, use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

B. FSK and Metal Jacket Flashing Sealants:

1. Products: Subject to compliance with requirements, provide the following:

a. Childers Products, Division of ITW; CP-76-8.
b. Foster Products Corporation, H. B. Fuller Company; 95-44.
c. Marathon Industries, Inc.; 405.
d. Mon-Eco Industries, Inc.; 44-05.
e. Vimasco Corporation; 750.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.
6. For indoor applications, use sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.5 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. ASJ-SSL: ASJ with self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip; complying with ASTM C 1136, Type I.
3. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.
4. PVDC Jacket for Indoor Applications: 4-mil- thick, white PVDC biaxially oriented barrier film with a permeance at 0.02 perms when tested according to ASTM E 96 and with a flame-spread index of 5 and a smoke-developed index of 20 when tested according to ASTM E 84.

a. Products: Subject to compliance with requirements, provide the following:

1) Dow Chemical Company (The); Saran 540 Vapor Retarder Film and Saran 560 Vapor Retarder Film.

5. PVDC Jacket for Outdoor Applications: 6-mil- thick white PVDC biaxially oriented barrier film with a permeance at 0.01 perms when tested according to ASTM E 96 and with a flame-spread index of 5 and a smoke-developed index of 25 when tested according to ASTM E 84.

a. Products: Subject to compliance with requirements, provide the following:

1) Dow Chemical Company (The); Saran 540 Vapor Retarder Film and Saran 560 Vapor Retarder Film.>

6. PVDC-SSL Jacket: PVDC jacket with a self-sealing, pressure-sensitive, acrylic-based adhesive covered by a removable protective strip.

a. Products: Subject to compliance with requirements, provide the following:

1) Dow Chemical Company (The); Saran 540 Vapor Retarder Film and Saran 560 Vapor Retarder Film.

2.6 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide the following:

a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0835.
b. Compac Corp.; 104 and 105.
c. Ideal Tape Co., Inc., an American Biltrite Company; 428 AWF ASJ.
d. Venture Tape; 1540 CW Plus, 1542 CW Plus, and 1542 CW Plus/SQ.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Products: Subject to compliance with requirements, provide the following:

a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0827.
b. Compac Corp.; 110 and 111.
c. Ideal Tape Co., Inc., an American Biltrite Company; 491 AWF FSK.
d. Venture Tape; 1525 CW, 1528 CW, and 1528 CW/SQ.

2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

C. PVC Tape: White vapor-retarder tape matching field-applied PVC jacket with acrylic adhesive. Suitable for indoor and outdoor applications.

1. Products: Subject to compliance with requirements, provide the following:

a. Avery Dennison Corporation, Specialty Tapes Division; Fasson 0555.
b. Compac Corp.; 130.
c. Ideal Tape Co., Inc., an American Biltrite Company; 370 White PVC tape.
d. Venture Tape; 1506 CW NS.

2. Width: 2 inches.
3. Thickness: 6 mils.
4. Adhesion: 64 ounces force/inch in width.
5. Elongation: 500 percent.
6. Tensile Strength: 18 lbf/inch in width.

## 2.7 CORNER ANGLES

A. PVC Corner Angles: 30 mils (0.8 mm) thick, minimum 1 by 1 inch (25 by 25 mm), PVC according to ASTM D 1784, Class 16354-C. White or color-coded to match adjacent surface.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine substrates and conditions for compliance with requirements for installation and other conditions affecting performance of insulation application.

1. Verify that systems and equipment to be insulated have been tested and are free of defects.
2. Verify that surfaces to be insulated are clean and dry.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

## 3.3 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of equipment and piping including fittings, valves, and specialties.

B. Install insulation materials, forms, vapor barriers or retarders, jackets, and thicknesses required for each item of equipment and pipe system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Keep insulation materials dry during application and finishing.

F. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

G. Install insulation with least number of joints practical.

H. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

I. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch- wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Install insulation with longitudinal seams at bottom of pipe. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge .at 2 inches o.c.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape as recommended by insulation material manufacturer to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to pipe flanges and fittings.

J. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

K. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

L. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

M. For above ambient services, do not install insulation to the following:

1. Vibration-control devices.
2. Testing agency labels and stamps.
3. Nameplates and data plates.

## 3.4 GENERAL PIPE INSULATION INSTALLATION

A. Requirements in this article generally apply to all insulation materials except where more specific requirements are specified in various pipe insulation material installation articles.

B. Insulation Installation on Fittings, Valves, Strainers, Flanges, and Unions:

1. Install insulation over fittings, valves, strainers, flanges, unions, and other specialties with continuous thermal and vapor-retarder integrity, unless otherwise indicated.
2. Insulate pipe elbows using preformed fitting insulation or mitered fittings made from same material and density as adjacent pipe insulation. Each piece shall be butted tightly against adjoining piece and bonded with adhesive.
3. Insulate tee fittings with preformed fitting insulation or sectional pipe insulation of same material and thickness as used for adjacent pipe. Cut sectional pipe insulation to fit. Butt each section closely to the next and hold in place with tie wire. Bond pieces with adhesive.
4. Insulate valves using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. For valves, insulate up to and including the bonnets, valve stuffing-box studs, bolts, and nuts.
5. Insulate strainers using preformed fitting insulation or sectional pipe insulation of same material, density, and thickness as used for adjacent pipe. Overlap adjoining pipe

insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker. Provide a removable reusable insulation cover. For below ambient services, provide a design that maintains vapor barrier.

6. Insulate unions using a section of oversized preformed pipe insulation. Overlap adjoining pipe insulation by not less than two times the thickness of pipe insulation, or one pipe diameter, whichever is thicker.
7. Cover segmented insulated surfaces with a layer of finishing cement and coat with a mastic. Install vapor-barrier mastic for below ambient services and a breather mastic for above ambient services. Reinforce the mastic with fabric-reinforcing mesh. Trowel the mastic to a smooth and well-shaped contour.
8. Stencil or label the outside insulation jacket of each union with the word "UNION." Match size and color of pipe labels.

## 3.5 PIPING INSULATION SCHEDULE, GENERAL

A. Acceptable preformed pipe and tubular insulation materials and thicknesses are identified for each piping system and pipe size range. If more than one material is listed for a piping system, selection from materials listed is Contractor's option.

B. Items Not Insulated: Unless otherwise indicated, do not install insulation on the following:

1. Underground piping.
2. Chrome-plated pipes and fittings unless there is a potential for personnel injury.

## 3.6 INDOOR PIPING INSULATION SCHEDULE

A. Domestic Cold Water:

1. NPS 1” and Smaller: Insulation shall be one of the following:

   a. Cellular Glass: 1-1/2 inches thick.
   b. Flexible Elastomeric1 inch thick.
   c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

2. NPS 1-1/4 and Larger: Insulation shall be one of the following:

   a. Cellular Glass: 1-1/2 inches thick.
   b. Flexible Elastomeric: 1 inch thick.
   c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

B. Domestic Hot and Recirculated Hot Water:

1. NPS 1-1/4 and Smaller: Insulation shall be one of the following:

   a. Cellular Glass: 1-1/2 inches thick.
   b. Flexible Elastomeric: 1 inch thick.
   c. Mineral-Fiber, Preformed Pipe Insulation, Type I: 1 inch thick.

END OF SECTION

SECTION 22 11 16

DOMESTIC WATER PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. aboveground domestic water pipes, tubes, fittings, and specialties inside the building.
2. Sleeves and sleeve seals.

1.3 PERFORMANCE REQUIREMENTS

A. Not Used

1.4 SUBMITTALS

A. Product Data: For the following products:

1. Backflow preventers.
2. Sleeves and sleeve seals.
3. Water penetration systems.

B. Water Samples: Specified in "Cleaning" Article.

C. Coordination Drawings: For piping in equipment rooms and other congested areas, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:
1. Domestic water piping.

D. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14 for plastic, potable domestic water piping and components.

C. Comply with NSF 61 for potable domestic water piping and components.

1.6 COORDINATION

A. Coordinate sizes and locations of site domestic water riser with actual pre-fabricated building floor openings provided.

PART 2 - PRODUCTS

2.1 PIPING MATERIALS

A. Comply with requirements in "Piping Schedule" Article for applications of pipe, tube, fitting materials, and joining methods for specific services, service locations, and pipe sizes.

2.2 COPPER TUBE AND FITTINGS

A. Hard Copper Tube: ASTM B 88, Type L and ASTM B 88, Type M water tube, drawn temper.

1. Cast-Copper Solder-Joint Fittings: ASME B16.18, pressure fittings.
2. Wrought-Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
3. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
4. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.
5. Copper Pressure-Seal-Joint Fittings:

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1) Elkhart Products Corporation; Industrial Division.
2) NIBCO INC.
3) Viega; Plumbing and Heating Systems.

b. NPS 2 and Smaller: Wrought-copper fitting with EPDM-rubber O-ring seal in each end.
c. NPS 2-1/2 to NPS 4: Cast-bronze or wrought-copper fitting with EPDM-rubber O-ring seal in each end.

B. Soft Copper Tube: ASTM B 88, Type K ASTM B 88, Type L water tube, annealed temper.

1. Copper Solder-Joint Fittings: ASME B16.22, wrought-copper pressure fittings.
2. Copper Pressure-Seal-Joint Fittings:

a. Manufacturers: Subject to compliance with requirements[provide products by one of the following:

1) Elkhart Products Corporation; Industrial Division.
2) NIBCO INC.
3) Viega; Plumbing and Heating Systems.

b. NPS 2 and Smaller: Wrought-copper fitting with EPDM-rubber O-ring seal in each end.
c. NPS 3 and NPS 4 Cast-bronze or wrought-copper fitting with EPDM-rubber O-ring seal in each end.

## 2.3 PIPING JOINING MATERIALS

A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free, unless otherwise indicated; full-face or ring type unless otherwise indicated.

B. Metal, Pipe-Flange Bolts and Nuts: ASME B18.2.1, carbon steel unless otherwise indicated.

C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.

D. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.

## 2.4 TRANSITION FITTINGS

A. General Requirements:

1. Same size as pipes to be joined.
2. Pressure rating at least equal to pipes to be joined.
3. End connections compatible with pipes to be joined.

B. Fitting-Type Transition Couplings: Manufactured piping coupling or specified piping system fitting.

C. Sleeve-Type Transition Coupling: AWWA C219.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Cascade Waterworks Manufacturing.
b. Dresser, Inc.; Dresser Piping Specialties.
c. Ford Meter Box Company, Inc. (The).
d. JCM Industries.
e. Romac Industries, Inc.
f. Smith-Blair, Inc; a Sensus company.
g. Viking Johnson; c/o Mueller Co.

D. Plastic-to-Metal Transition Fittings:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

a. Charlotte Pipe and Foundry Company.
b. Harvel Plastics, Inc.
c. Spears Manufacturing Company.

## 2.5 SLEEVES

A. Galvanized-Steel-Sheet Sleeves: 0.0239-inch minimum thickness; round tube closed with welded longitudinal joint.

B. Molded-PE Sleeves: Reusable, PE, tapered-cup shaped, and smooth outer surface with nailing flange for attaching to wooden forms.

2.6 SLEEVE SEALS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Advance Products & Systems, Inc.
2. Calpico, Inc.
3. Metraflex, Inc.
4. Pipeline Seal and Insulator, Inc.

B. Description: Modular sealing element unit, designed for field assembly, used to fill annular space between pipe and sleeve.

1. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size of pipe.

2.7 GROUT

A. Standard: ASTM C 1107, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.

B. Characteristics: Nonshrink; recommended for interior and exterior applications.

C. Design Mix: 5000-psi, 28-day compressive strength.

D. Packaging: Premixed and factory packaged.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of domestic water piping. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

B. Install copper tubing under building slab according to CDA's "Copper Tube Handbook."

C. Install water-pressure-reducing valves downstream from riser shutoff valve.

D. Install piping concealed from view and protected from physical contact by building occupants unless otherwise indicated and except in equipment rooms and service areas.

E. Install piping to permit valve servicing.

F. Install nipples, unions, special fittings, and valves with pressure ratings the same as or higher than system pressure rating used in applications below unless otherwise indicated.

G. Install piping free of sags and bends.

H. Install fittings for changes in direction and branch connections.

I. Install unions in copper tubing at final connection to each piece of equipment, machine, and specialty.

J. Install thermometers on inlet and outlet piping from each water heater.

## 3.2 JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.

C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

1. Apply appropriate tape or thread compound to external pipe threads.
2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.

D. Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Brazed Joints" Chapter.

E. Soldered Joints: Apply ASTM B 813, water-flushable flux to end of tube. Join copper tube and fittings according to ASTM B 828 or CDA's "Copper Tube Handbook."

F. Pressure-Sealed Joints: Join copper tube and pressure-seal fittings with tools recommended by fitting manufacturer.

G. Copper-Tubing, Push-on Joints: Clean end of tube. Measure insertion depth with manufacturer's depth gage. Join copper tube and push-on-joint fittings by inserting tube to measured depth.

H. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

## 3.3 VALVE INSTALLATION

A. General-Duty Valves: Comply with requirements in Division 22 Section "General-Duty Valves for Plumbing Piping" for valve installations.

B. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball or gate valves for piping NPS 2 and smaller.

C. Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.

1. Hose-End Drain Valves: At low points in water mains, risers, and branches.

## 3.4 TRANSITION FITTING INSTALLATION

A. Install transition couplings at joints of dissimilar piping.

B. Transition Fittings in Aboveground Domestic Water Piping NPS 2 and Smaller: Plastic-to-metal transition fittings or unions.

## 3.5 DIELECTRIC FITTING INSTALLATION

A. Install dielectric fittings in piping at connections of dissimilar metal piping and tubing.

B. Dielectric Fittings for NPS 2 and Smaller: Use dielectric unions.

## 3.6 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment" for pipe hanger and support products and installation.

1. Vertical Piping: MSS Type 8 or 42, clamps.
2. Individual, Straight, Horizontal Piping Runs:

    a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

B. Support vertical piping and tubing at base and at each floor.

C. Rod diameter may be reduced one size for double-rod hangers, to a minimum of 3/8inch.

D. Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 3/4 and Smaller: 60 inches with 3/8-inch rod.
2. NPS 1 and NPS 1-1/4: 72 inches with 3/8-inch rod.
3. NPS 1-1/2 and NPS 2: 96 inches with 3/8-inch rod.

## 3.7 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Install piping adjacent to equipment and machines to allow service and maintenance.

C. Connect domestic water piping to exterior water-service piping. Use transition fitting to join dissimilar piping materials.

D. Connect domestic water piping to water-service piping with shutoff valve; extend and connect to the following:

1. Domestic Water Heaters: Cold-water inlet and hot-water outlet piping in sizes indicated, but not smaller than sizes of water heater connections.
2. Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code.

## 3.8 IDENTIFICATION

A. Identify system components. Comply with requirements in Division 22 Section "Identification for Plumbing Piping and Equipment" for identification materials and installation.

## 3.9 FIELD QUALITY CONTROL

A. Perform tests and inspections.

1. During installation, notify authorities having jurisdiction at least one day before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

    a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
    b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

2. Reinspection: If authorities having jurisdiction find that piping will not pass tests or inspections, make required corrections and arrange for reinspection.
3. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

B. Piping Tests:

1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit a separate report for each test, complete with diagram of portion of piping tested.
3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
4. Cap and subject piping to static water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
6. Prepare reports for tests and for corrective action required.

C. Domestic water piping will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

## 3.10 CLEANING

A. Clean and disinfect potable domestic water piping as follows:

1. Purge new piping and parts of existing piping that have been altered, extended, or repaired before using.
2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction; if methods are not prescribed, use procedures described in either AWWA C651 or AWWA C652 or follow procedures described below:

    a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
    b. Fill and isolate system according to either of the following:

        1) Fill system or part thereof with water/chlorine solution with at least 50 ppm of chlorine. Isolate with valves and allow to stand for 24 hours.
        2) Fill system or part thereof with water/chlorine solution with at least 200 ppm of chlorine. Isolate and allow to stand for three hours.

c. Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.

B. Prepare and submit reports of purging and disinfecting activities.

C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

## 3.11 PIPING SCHEDULE

A. Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below unless otherwise indicated.

B. Flanges and unions may be used for aboveground piping joints unless otherwise indicated.

C. Aboveground domestic water piping, NPS 2 and smaller, shall be one of the following:

1. Hard copper tube, ASTM B 88, Type L ASTM B 88, Type M wrought copper solder-joint fittings; and soldered joints.

END OF SECTION

SECTION 22 13 16

SANITARY WASTE AND VENT PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following for soil, waste, and vent piping inside the building:

1. Pipe, tube, and fittings.
2. Special pipe fittings..

1.3 DEFINITIONS

A. ABS: Acrylonitrile-butadiene-styrene plastic.

B. EPDM: Ethylene-propylene-diene terpolymer rubber.

C. LLDPE: Linear, low-density polyethylene plastic.

D. NBR: Acrylonitrile-butadiene rubber.

E. PE: Polyethylene plastic.

F. PVC: Polyvinyl chloride plastic.

G. TPE: Thermoplastic elastomer.

1.4 PERFORMANCE REQUIREMENTS

A. Components and installation shall be capable of withstanding the following minimum working pressure, unless otherwise indicated:

1. Soil, Waste, and Vent Piping: 10-foot head of water.

1.5 SUBMITTALS

A. Product Data: For pipe, tube, fittings, and couplings.

B. Shop Drawings:

1. Material and fittings

C. Field quality-control inspection and test reports.

1.6 QUALITY ASSURANCE

A. Piping materials shall bear label, stamp, or other markings of specified testing agency.

B. Comply with NSF 14, "Plastics Piping Systems Components and Related Materials," for plastic piping components. Include marking with "NSF-dwv" for plastic drain, waste, and vent piping; "NSF-drain" for plastic drain piping; "NSF-tubular" for plastic continuous waste piping; and "NSF-sewer" for plastic sewer piping.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

2.3 HUB-AND-SPIGOT, CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 74, Service class.

B. Gaskets: ASTM C 564, rubber.

C. Calking Materials: ASTM B 29, pure lead and oakum or hemp fiber.

2.4 HUBLESS CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and Fittings: ASTM A 888 or CISPI 301.

B. Shielded Couplings: ASTM C 1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.

1. Standard, Shielded, Stainless-Steel Couplings: CISPI 310, with stainless-steel corrugated shield; stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve.

a. Manufacturers:

1) ANACO.
2) Fernco, Inc.
3) Ideal Div.; Stant Corp.
4) Mission Rubber Co.
5) Tyler Pipe; Soil Pipe Div.

C. Rigid, Unshielded Couplings: ASTM C 1461, sleeve-type, reducing- or transition-type mechanical coupling molded from ASTM C 1440, TPE material with corrosion-resistant-metal tension band and tightening mechanism on each end.

1. Manufacturers:

a. ANACO.

## 2.5 ABS PIPE AND FITTINGS

A. Solid-Wall ABS Pipe: ASTM D 2661, Schedule 40.

B. Cellular-Core ABS Pipe: ASTM F 628, Schedule 40.

C. ABS Socket Fittings: ASTM D 2661, made to ASTM D 3311, drain, waste, and vent patterns.

D. Solvent Cement and Adhesive Primer:

1. Use ABS solvent cement that has a VOC content of 325 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.6 PVC PIPE AND FITTINGS

A. Solid-Wall PVC Pipe: ASTM D 2665, drain, waste, and vent.

1. PVC Socket Fittings: ASTM D 2665, socket type, made to ASTM D 3311, drain, waste, and vent patterns.

B. Cellular-Core PVC Pipe: ASTM F 891, Schedule 40.

1. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Schedule 40 pipe.

C. Cellular-Core, Sewer and Drain Series, PVC Pipe: ASTM F 891, Series PS 100.

1. PVC Socket Fittings: ASTM D 2665, made to ASTM D 3311, drain, waste, and vent patterns and to fit Series PS 100 sewer and drain pipe.

D. Solvent Cement and Adhesive Primer:

1. Use PVC solvent cement that has a VOC content of 510 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
2. Use adhesive primer that has a VOC content of 550 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.7 SPECIAL PIPE FITTINGS

A. Flexible, Nonpressure Pipe Couplings: Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition pattern. Include shear ring, ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.

1. Manufacturers:

a. Dallas Specialty & Mfg. Co.
b. Fernco, Inc.
c. Logan Clay Products Company (The).
d. Mission Rubber Co.
e. NDS, Inc.
f. Plastic Oddities, Inc.

2. Sleeve Materials:

a. For Cast-Iron Soil Pipes: ASTM C 564, rubber.
b. For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
c. For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

B. Shielded Nonpressure Pipe Couplings: ASTM C 1460, elastomeric or rubber sleeve with full-length, corrosion-resistant outer shield and corrosion-resistant-metal tension band and tightening mechanism on each end.

1. Manufacturers:

a. Cascade Waterworks Mfg. Co.
b. Mission Rubber Co.

C. Rigid, Unshielded, Nonpressure Pipe Couplings: ASTM C 1461, sleeve-type reducing- or transition-type mechanical coupling molded from ASTM C 1440, TPE material with corrosion-resistant-metal tension band and tightening mechanism on each end.

1. Manufacturers:

a. ANACO.

D. Flexible Ball Joints: Ductile-iron fitting with combination of flanged and mechanical-joint ends complying with AWWA C110 or AWWA C153. Include gasketed ball-joint section and ductile-iron gland, rubber gasket, and steel bolts.

1. Manufacturers:

a. EBAA Iron Sales, Inc.

## PART 3 - EXECUTION

### 3.1 EXCAVATION

A. Refer to Division 31 Section "Earth Moving" for excavating, trenching, and backfilling.

### 3.2 PIPING APPLICATIONS

A. Aboveground, soil and waste piping NPS 4 and smaller the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless cast-iron soil pipe and fittings couplings; and hubless-coupling joints.

B. Aboveground, vent piping NPS 4 and smaller shall be any of the following:

1. Service class, cast-iron soil pipe and fittings; gaskets; and gasketed joints.
2. Hubless cast-iron soil pipe and fittings; standard, shielded, stainless-steel couplings; and hubless-coupling joints.

C. Underground, soil, waste, and vent piping NPS 4 and smaller shall be any of the following:

1. Service class, cast-iron soil piping; gaskets; and gasketed joints.
2. Hubless cast-iron soil pipe and fittings; standard, shielded, stainless-steel couplings; and hubless-coupling joints.
3. Solid wall ABS pipe, ABS socket fittings, and solvent-cemented joints.
4. Solid wall PVC pipe, PVC socket fittings, and solvent-cemented joints.

## 3.3 PIPING INSTALLATION

A. Basic piping installation requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Install cleanouts at grade and extend to where building sanitary drains connect to building sanitary sewers.

C. Install cast-iron sleeve with water stop and mechanical sleeve seal at each service pipe penetration through foundation wall. Select number of interlocking rubber links required to make installation watertight. Sleeves and mechanical sleeve seals are specified in Division 22 Section "Common Work Results for Plumbing."

D. Install wall-penetration fitting at each service pipe penetration through foundation wall. Make installation watertight.

E. Install cast-iron soil piping according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook," Chapter IV, "Installation of Cast Iron Soil Pipe and Fittings."

1. Install encasement on underground piping according to ASTM A 674 or AWWA C105.

F. Make changes in direction for soil and waste drainage and vent piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if 2 fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

G. Lay buried building drainage piping beginning at low point of each system. Install true to grades and alignment indicated, with unbroken continuity of invert. Place hub ends of piping upstream. Install required gaskets according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab in piping and pull past each joint as completed.

H. Install soil and waste drainage and vent piping at the following minimum slopes, unless otherwise indicated:

1. Building Sanitary Drain: 2 percent downward in direction of flow for piping NPS 3 and smaller; 1 percent downward in direction of flow for piping NPS 4 and larger.
2. Horizontal Sanitary Drainage Piping: 2 percent downward in direction of flow.
3. Vent Piping: 1 percent down toward vertical fixture vent or toward vent stack.

I. Sleeves are not required for cast-iron soil piping passing through concrete slabs-on-grade if slab is without membrane waterproofing.

J. Install underground ABS and PVC soil and waste drainage piping according to ASTM D 2321.

K. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

## 3.4 JOINT CONSTRUCTION

A. Basic piping joint construction requirements are specified in Division 22 Section "Common Work Results for Plumbing."

B. Join hub-and-spigot, cast-iron soil piping with gasket joints according to CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for compression joints.

C. Join hubless cast-iron soil piping according to CISPI 310 and CISPI's "Cast Iron Soil Pipe and Fittings Handbook" for hubless-coupling joints.

D. PVC Nonpressure Piping Joints: Join piping according to ASTM D 2665.

## 3.5 HANGER AND SUPPORT INSTALLATION

A. Pipe hangers and supports are specified in Division 22 Section "Hangers and Supports for Plumbing Piping and Equipment." Install the following:

1. Install individual, straight, horizontal piping runs according to the following:

a. 100 Feet and Less: MSS Type 1, adjustable, steel clevis hangers.

B. Support vertical piping and tubing at base and at each floor.

C. Install hangers for cast-iron soil piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2: 60 inches with 3/8-inch rod.
2. NPS 3: 60 inches with 1/2-inch rod.
3. NPS 4 and NPS 5: 60 inches with 5/8-inch rod.

D. Install supports for vertical cast-iron soil piping every 15 feet (4.5 m).

## 3.6 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

B. Connect soil and waste piping to exterior sanitary sewerage piping. Use transition fitting to join dissimilar piping materials.

C. Connect drainage and vent piping to the following:

1. Plumbing Fixtures: Connect drainage piping in sizes indicated, but not smaller than required by plumbing code.
2. Plumbing Fixtures and Equipment: Connect atmospheric vent piping in sizes indicated, but not smaller than required by authorities having jurisdiction.

3.7 FIELD QUALITY CONTROL

A. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction.

1. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
2. Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

B. Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

C. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

D. Test sanitary drainage and vent piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
2. Leave uncovered and unconcealed new, altered, extended, or replaced drainage and vent piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
3. Roughing-in Plumbing Test Procedure: Test drainage and vent piping, except outside leaders, on completion of roughing-in. Close openings in piping system and fill with water to point of overflow, but not less than 10-foot head of water. From 15 minutes before inspection starts to completion of inspection, water level must not drop. Inspect joints for leaks.
4. Finished Plumbing Test Procedure: After plumbing fixtures have been set and traps filled with water, test connections and prove they are gastight and watertight. Plug vent-stack openings on roof and building drains where they leave building. Introduce air into piping system equal to pressure of 1-inch wg. Use U-tube or manometer inserted in trap of water closet to measure this pressure. Air pressure must remain constant without introducing additional air throughout period of inspection. Inspect plumbing fixture connections for gas and water leaks.
5. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
6. Prepare reports for tests and required corrective action.

E. Test force-main piping according to procedures of authorities having jurisdiction or, in absence of published procedures, as follows:

1. Leave uncovered and unconcealed new, altered, extended, or replaced force-main piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.
2. Cap and subject piping to static-water pressure of 50 psig above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
3. Repair leaks and defects with new materials and retest piping, or portion thereof, until satisfactory results are obtained.
4. Prepare reports for tests and required corrective action.

3.8 CLEANING

A. Clean interior of piping. Remove dirt and debris as work progresses.

B. Protect drains during remainder of construction period to avoid clogging with dirt and debris and to prevent damage from traffic and construction work.

C. Place plugs in ends of uncompleted piping at end of day and when work stops.

END OF SECTION

SECTION 26 00 00

BASIC ELECTRICAL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Basic Electrical Requirements specifically applicable to Division 16 Sections, in addition to Division 1 - General Requirements.

B. The work included in this division of the specifications consists of furnishing labor, tools, equipment, supplies, and materials unless otherwise specified, and in performing operations necessary for the installation of the complete Electrical System as required by these specifications or shown on the drawings, subject to the terms and conditions of the Contract. The work shall also include the completion of details of electrical work not mentioned or shown which are necessary for the successful operation of electrical systems described on the drawings or required by these specifications.

C. The Agreement, Bidding Documents, General Conditions of the Contract, Supplemental General Conditions, and other applicable portions of Division 1, and all Addenda issued prior to Agreement execution form a part of these specifications and apply to all Contracts or Subcontracts relating to the electrical systems.

1.2 ALLOWANCES

A. Cash Allowance: Refer to Section 01019 for allowance sum applicable to Work.

B. Allowance includes purchase and delivery of:
1. One (1) Audex package ST-SM-IR.
2. One (1) Audex TV listing system ST-TV-IR.
3. One (1) Audex ST-LLHS2.
4. Three (12) silent call sidekick receiver model SK09214.
5. Nine (9) Silent Call wireless doorbell transmitters model DB4-55.
6. Three (3) Silent Call fire alarm transmitter model FA1004-4.
7. Nine (9) Gentex smoke detectors model 9120F.
8. Nine (9) Gentex smoke detectors model 9120FT.

1.3 REFERENCES

A. ANSI/NFPA 70 - National Electrical Code.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Submit shop drawings and product data grouped to include complete submittals of related systems, products, and accessories in a single submittals.

C. Mark dimensions and values in units to match those specified.

1.5 REGULATORY REQUIREMENTS

A. Conform to IBC 2009.

B. Electrical: Conform to NFPA 70.

C. Conform to NFPA 72.

D. Obtain permits, and request inspections from authority having jurisdiction.

E. The Contractor shall obtain and pay for licenses and permits required, and shall pay for fees and charges for the connection to outside services and use of property other than the site of the work for storage of materials or other purposes.

F. The Contractor shall procure and maintain, at his expense, such insurance required by law and/or specified in the General Conditions.

G. All materials, products, devices, fixtures, forms or types of construction included in this project shall meet or exceed the published requirements of National Electrical Code (NEC), American National Standards Institute (ANSI), Institute of Electrical and Electronics Engineers (IEEE), National Fire Protection Association (NFPA) 70, 99, 101,110, and National Electrical Manufactures Associations (NEMA). All equipment shall bear the Underwriter's (U.L.) label.

1.6 PROJECT/SITE CONDITIONS

A. Install Work in locations shown on Drawings, unless prevented by Project conditions.

B. The drawings are diagrammatic unless indicated otherwise. The drawings reflect circuiting only and are not depicting exact conduit routing unless specifically noted otherwise. Homerun circuits may be combined per requirements of NEC. Do not share neutral conductors in Homerun unless specifically noted on Drawings.

C. Prepare drawings showing proposed rearrangement of Work to meet Project conditions, including changes to Work specified in other Sections. Obtain permission of Owner before proceeding.

D. Data presented on these drawings are as accurate as planning can determine, but field verification of all dimensions, locations, levels, etc., to suite field conditions is required. Review all architectural, interior, structural, civil, and mechanical drawings; and adjust all work to meet the requirements of conditions shown. Discrepancies between different plans, or between drawings and specifications, or regulations and codes governing the installation shall be brought to the attention of the engineer in writing before the date of bid opening. If discrepancies are not reported, the contractor shall bid the greater quantity or better quality, and appropriate adjustments will be made after contract award. Contractor shall be responsible to field measure and confirm mounting heights and location of electrical equipment with respect to counters, radiation, etc. Do not scale distances off the electrical drawings. Use actual building dimensions.

E. Guarantee all material furnished and all workmanship performed for a period of one year from the date of final acceptance of the work. Any defects developing with in this period, traceable to material furnished as a part of this section or workmanship performed hereunder, shall be made good at no additional expense to the owner.

1.7 FIELD CHANGE ORDERS

A. All change orders for electrical equipment shall be priced in accordance with Mean's Electrical Cost Data for Change Orders 2011 Edition.

PART 2 PRODUCTS

\\Not Used

PART 3 EXECUTION

\\Not Used

END OF SECTION

SECTION 26 05 03

EQUIPMENT WIRING CONNECTIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes electrical connections to equipment.

B. Related Sections:
1. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
2. Section 26 05 33 - Raceway and Boxes for Electrical Systems.

1.2 REFERENCES

A. National Electrical Manufacturers Association:
1. NEMA WD 1 - General Requirements for Wiring Devices.
2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Product Data: Submit wiring device manufacturer’s catalog information showing dimensions, configurations, and construction.

C. Manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

A. See Division 1 Submittal Procedures for Execution and Closeout Requirements.

B. Project Record Documents: Record actual locations, sizes, and configurations of equipment connections.

1.5 COORDINATION

A. See Division 1 Administrative Requirements for Coordination and Project Conditions.

B. Obtain and review shop drawings, product data, manufacturer’s wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.

C. Determine connection locations and requirements.

D. Sequence rough-in of electrical connections to coordinate with installation of equipment.

E. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.1 CORD AND PLUGS

A. Manufacturers:
1. Woodhead.
2. Hubbell.
3. Leviton.
4. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Attachment Plug Construction: Conform to NEMA WD 1.

C. Configuration: NEMA WD 6; match receptacle configuration at outlet furnished for equipment.

D. Cord Construction: Type SO multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.

E. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

PART 3 EXECUTION

3.1 EXAMINATION

A. See Division 1 Administrative Requirements for Coordination and Project Conditions.

B. Verify equipment is ready for electrical connection, for wiring, and to be energized.

3.2 EXISTING WORK

A. Remove exposed abandoned equipment wiring connections, including abandoned connections above accessible ceiling finishes.

B. Disconnect abandoned utilization equipment and remove wiring connections. Remove abandoned components when connected raceway is abandoned and removed. Install blank cover for abandoned boxes and enclosures not removed.

C. Extend existing equipment connections using materials and methods compatible with existing electrical installations, or as specified.

3.3 INSTALLATION

A. Make electrical connections.

B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.

C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.

D. Install receptacle outlet to accommodate connection with attachment plug.

E. Install cord and cap for field-supplied attachment plug.

F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.

G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.

H. Install terminal block jumpers to complete equipment wiring requirements.

I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

J. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

3.4 ADJUSTING

A. See Division 1 Submittal procedures for Execution and Closeout Requirements.

B. Cooperate with utilization equipment installers and field service personnel during checkout and starting of equipment to allow testing and balancing and other startup operations. Provide personnel to operate electrical system and checkout wiring connection components and configurations.

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

## PART 1 GENERAL

### 1.1 SUMMARY

A. Section includes building wire and cable; metal clad cable; and wiring connectors and connections.

B. Related Sections:
1. Section 26 05 53 - Identification for Electrical Systems: Product requirements for wire identification.

### 1.2 REFERENCES

A. International Electrical Testing Association:
1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

B. National Fire Protection Association:
1. NFPA 70 - National Electrical Code.
2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

C. Underwriters Laboratories, Inc.:
1. UL 1277 – Standard for Safety for Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.

### 1.3 SYSTEM DESCRIPTION

A. Product Requirements: Provide products as follows:
1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
2. Stranded conductors for control circuits.
3. Conductor not smaller than 12 AWG for power and lighting circuits.
4. Conductor not smaller than 14 AWG for control circuits.
5. 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet and shorter than 149 feet.
6. 8 AWG conductors for 20 ampere, 120 volt branch circuits longer than 150 feet.
7. 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 200 feet and shorter than 329 feet.
8. 8 AWG conductors for 20 ampere, 277 volt branch circuits longer than 330 feet.

B. Wiring Methods: Provide the following wiring methods:
1. Concealed Dry Interior Locations: Use only building wire, Type THW, THHN/THWN, XHHW insulation, in raceway or metal clad cable.
2. Exposed Dry Interior Locations: Use only building wire, Type THW, THHN/THWN, XHHW insulation, in raceway or metal clad cable.
3. Above Accessible Ceilings: Use only building wire, Type THW, THHN/THWN, XHHW insulation, in raceway, or metal clad cable.
4. Wet or Damp Interior Locations: Use only building wire, Type THW, THHN/THWN, XHHW, insulation in raceway.
5. Exterior Locations: Use only building wire, Type THW, THHN/THWN, XHHW, insulation in raceway.

6. Underground Locations: Use only building wire, Type THW, THHN/THWN, XHHW, insulation in raceway.

C. Metal Clad (MC) Cable may be used at the contractor's option for branch circuits between devices and for switching circuits. Exceptions to this are as follows:
1. Finished areas requiring surface raceway shall be in EMT conduit with conductors.
2. Exposed wiring runs in unfinished spaces shall be individual wires in approved raceways.
3. Type MC cable shall not be used for circuits crossing smoke/fire walls.
4. Other restrictions as listed in the NEC and other applicable codes.

1.4 DESIGN REQUIREMENTS

A. Conductor sizes are based on copper unless indicated as aluminum or "AL".

B. When aluminum conductor is substituted for copper conductor, size to match circuit requirements for copper conductor ampacity and voltage drop.

1.5 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Product Data: Submit for building wire and each cable assembly type.

C. Design Data: Indicate voltage drop and ampacity calculations for aluminum conductors substituted for copper conductors.

D. Test Reports: Indicate procedures and values obtained.

1.6 CLOSEOUT SUBMITTALS

A. See Division 1 for Submittal Procedures for Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of components and circuits.

1.7 QUALITY ASSURANCE

A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.

B. Perform Work in accordance with NECA's Standard of Installation and in accordance with recognized industry practices.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.9 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on Drawings.

1.10 COORDINATION

A. See Division 1 Administrative Requirements for Coordination and Project Conditions.

B. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.

C. Wire and cable routing indicated is approximate unless dimensioned.

PART 2 PRODUCTS

2.1 BUILDING WIRE

A. Manufacturers:
1. Southwire Company.
2. Okonite.
3. Cable C.
4. American Insulated Wire.
5. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Product Description: Single conductor insulated wire.

C. Conductor: Copper for sizes smaller than 2 AWG; copper or aluminum for sizes 2 AWG and larger.
1. Aluminum alloy conductors shall be compact stranded conductors of a recognized Aluminum Association 8000 Series aluminum alloy conductor material (AA-8000 series alloy).
2. It is the responsibility of the contractor to increase the size of the conduit, wire gutter, or enclosure, if necessary, to accommodate the aluminum conductors and meet allowable code requirements.
3. It is the responsibility of the contractor to increase the size of the aluminum conductor to match the ampacity of the copper conductor circuit shown on the Drawings.
4. The contractor shall submit a feeder schedule to the Engineer for all conductor substitutions indicating the aluminum conductor wire size and the conduit size. The contractor shall not begin the installation until written approval is granted by the Engineer.
5. All aluminum conductors shall terminate on a compression lug or compression adapter. An oxide-inhibiting joint compound must be applied on the aluminum conductor during termination. The compression connectors shall be installed according to manufacturers' instructions with the compression tool recommended by the manufacturer of the connector.
6. The contractor shall perform an infrared survey of all aluminum conductor connections after the installation is complete and in normal service. Infrared surveys shall be performed during periods of maximum possible loading with at least 30% of rated load of the equipment being inspected. All connections with elevated temperatures shall be corrected by the contractor.
7. No copper-to-aluminum transitions permitted when splicing onto existing copper feeders.

D. Insulation: 600 volt rating; material rated 75 degrees C.

E. Insulation Voltage Rating: 600 volts.

2.2 METAL CLAD CABLE

A. Manufacturers:
   1. AFC Co.
   2. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Conductor: Copper minimum # 12 wire size.

C. Insulation Voltage Rating: 600 volts.

D. Insulation Temperature Rating: 90 degrees C.

E. Insulation Material: Thermoplastic.

F. Armor Material: Steel.

G. Armor Design: Corrugated tube with an overall mylar/polyproprolene tape covering the entire assembly.

H. Grounding: Provide separate green insulated grounding conductor.

2.3 WIRING CONNECTORS

A. Provide UL-type, factory-fabricated, metal connector taps or splices of sizes, ampacity ratings, materials, types and classes for applications and services indicated. Where not indicated, provide proper selection as determined by Installer to comply with project's installation requirements, NEC and NEMA standards. Select from the following to fulfill project requirements:
   1. Split Bolt Connectors.
   2. Solderless Pressure Connectors.
   3. Spring Wire Connectors.
   4. Compression Connectors.

2.4 TERMINATIONS

A. Terminal Lugs for Wires 6 AWG and Smaller: Solderless, compression type copper.

B. Lugs for Wires 4 AWG and Larger. Color keyed, compression type copper, with insulating sealing collars.

PART 3 EXECUTION

3.1 EXAMINATION

A. See Division 1 Administrative Requirements for Coordination and Project Conditions.

B. Verify interior of building has been protected from weather.

C. Verify mechanical work likely to damage wire and cable has been completed.

D. Verify raceway installation is complete and supported.

3.2 PREPARATION

A. Completely and thoroughly swab raceway before installing wire.

3.3 EXISTING WORK

A. Remove exposed abandoned wire and cable, including abandoned wire and cable above accessible ceiling finishes. Patch surfaces where removed cables pass through building finishes.

B. Disconnect abandoned circuits and remove circuit wire and cable. Remove abandoned boxes when wire and cable servicing boxes is abandoned and removed. Install blank cover for abandoned boxes not removed.

C. Provide access to existing wiring connections remaining active and requiring access. Modify installation or install access panel.

D. Extend existing circuits using materials and methods as specified.

E. Clean and repair existing wire and cable remaining or wire and cable to be reinstalled.

3.4 INSTALLATION

A. Route wire and cable to meet Project conditions.

B. Neatly train and lace wiring inside boxes, equipment, and panelboards.

C. Identify and color code wire and cable under provisions of Section 26 05 53. Identify each conductor with its circuit number or other designation indicated.

D. Special Techniques-Building Wire in Raceway:
1. Pull conductors into raceway at same time.
2. Install building wire 4 AWG and larger with pulling equipment.

E. Special Techniques - Cable:
1. Protect exposed cable from damage.
2. Support cables above accessible ceiling, using spring metal clips to support cables from structure. Do not rest cable on ceiling panels.
3. Use suitable cable fittings and connectors.

F. Special Techniques - Wiring Connections:
1. Clean conductor surfaces before installing lugs and connectors.
2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
3. Each tap, joint, or splice in conductors No. 4 AWG and larger shall be taped with a minimum of two layers of rubber compound tape and three layers of vinyl plastic electrical tape and a finish wrap of color coding tape, where required by code. Insulation of splice shall match or exceed insulation level of conductors.
4. Cable splices shall be made only in distribution and junction boxes.
5. Tighten electrical connectors and terminals, including screws and bolts, in accordance with manufacturers published torque tightening requirements. If not indicated, tighten connectors and terminals to comply with tightening torques specified in UL Standards 486A and B.
6. Splices shall not be made in feeders.
7. Terminate aluminum conductors with tin-plated, aluminum-bodied compression connectors only. Fill with anti-oxidant compound before installing conductor.

8. Install suitable reducing connectors or mechanical connector adaptors for connecting aluminum conductors to copper conductors.

G. Install solid conductor for feeders and branch circuits 10 AWG and smaller.

H. Use stranded conductor, No. 8 AWG and layer for general use wiring.
1. Use stranded conductor, No. 12 AWG and larger, for motors and other installations where vibration is generated and for wiring to manufactured equipment.
2. Use stranded conductor, No. 14 AWG minimum for control wiring.
3. Install crimp on fork terminals for stranded conductor device terminations. Do not place bare stranded conductors directly under screws.

I. Install terminal lugs on ends of 600 volt wires unless lugs are furnished on connected device, such as circuit breakers.

J. Size lugs in accordance with manufacturer's recommendations terminating wire sizes. Install 2-hole type lugs to connect wire 4 AWG and larger to copper bus bars.

K. For terminal lugs fastened together such as on motors, transformers, and other apparatus, or when space between studs is small enough that lugs can turn and touch each other, insulate for dielectric strength of 2-1/2 times normal potential of circuit.

3.5 WIRE COLOR

A. General:
1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
a. Black and red for single phase circuits at 120/240 volts.
b. Black, red, and blue for circuits at 120/208 volts single or three phase.
c. Brown, orange, and yellow for circuits at 277/480 volts single or three phase.
2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:
a. Black and red for single phase circuits at 120/240 volts.
b. Black, red, and blue for circuits at 120/208 volts single or three phase.
c. Brown, orange, and yellow for circuits at 277/480 volts single or three phase.

B. Neutral Conductors: White for 120/208 and gray for 277/480 volt circuits. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.

C. Branch Circuit Conductors: Install three or four wire home runs with each phase uniquely color coded.

D. Feeder Circuit Conductors: Uniquely color code each phase.

E. Ground Conductors:
1. For 6 AWG and smaller: Green.
2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.
3. For isolated ground circuits: Green with yellow stripe.

3.6 FIELD QUALITY CONTROL

A. See Division 1 for Quality control requirements and for execution of Field inspecting, testing, adjusting, and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform inspections and tests listed in NETA ATS, Section 7.3.1.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Wire.
2. Mechanical connectors.
3. Exothermic connections.

1.2 REFERENCES

A. Institute of Electrical and Electronics Engineers:
1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.

B. International Electrical Testing Association:
1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

C. National Fire Protection Association:
1. NFPA 70 - National Electrical Code.

1.3 SYSTEM DESCRIPTION

A. Grounding systems use the following elements as grounding electrodes:
1. Metal building frame.
2. Concrete-encased electrode.
3. Ground ring specified in Division 1.
4. Rod electrode.
5. Metal underground water pipe.

1.4 PERFORMANCE REQUIREMENTS

A. Grounding System Resistance: 5 ohms maximum.

1.5 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Product Data: Submit data on grounding electrodes and connections.

C. Test Reports: Indicate overall resistance to ground [and resistance of each electrode].

D. Manufacturer's Installation Instructions: Submit for active electrodes.

E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

A. See Division 1 Submittal Procedures for execution and Closeout Requirements.

B. Project Record Documents: Record actual locations of components and grounding electrodes.

1.7 QUALITY ASSURANCE

A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.

B. Perform Work in accordance with NECA's Standard of Installation.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum 3 years documented experience approved by manufacturer.

1.9 PRE-INSTALLATION MEETINGS

A. See Division 1: Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

A. See Division 1 for Product Storage and Handling Requirements.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

D. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.11 COORDINATION

A. See Division 1 Administrative Requirements for Coordination and Project Conditions.

B. Complete grounding and bonding of building reinforcing steel prior concrete placement.

PART 2 PRODUCTS

2.1 WIRE

A. Material: Stranded copper.

B. Foundation Electrodes: 4 AWG unless indicated on drawings.

C. Grounding Electrode Conductor: Copper conductor bare.

D. Bonding Conductor: Copper conductor bare.

2.2 MECHANICAL CONNECTORS

A. Manufacturers:
1. Apache Grounding/Erico Inc.
2. Copperweld, Inc.
3. Erico, Inc.
4. O-Z Gedney Co.
5. Thomas & Betts, Electrical.
6. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

2.3 EXOTHERMIC CONNECTIONS

A. Manufacturers:
1. Apache Grounding/Erico Inc.
2. Cadweld, Erico, Inc.
3. Copperweld, Inc.
4. ILSCO Corporation.
5. O-Z Gedney Co.
6. Thomas & Betts, Electrical.
7. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

PART 3 EXECUTION

3.1 EXAMINATION

A. See Division 1: Administrative Requirements: Verification of existing conditions before starting work.

B. Verify final backfill and compaction has been completed before driving rod electrodes.

3.2 PREPARATION

A. Remove paint, rust, mill oils, and surface contaminants at connection points.

3.3 EXISTING WORK

A. Modify existing grounding system to maintain continuity to accommodate renovations.

B. Extend existing grounding system using materials and methods compatible with existing electrical installations.

3.4 INSTALLATION

A. Install in accordance with IEEE 142.

B. Install rod electrodes at locations as indicated on Drawings. Install additional rod electrodes to achieve specified resistance to ground. Drive ground rods to a depth of 12" below finished grade.

C. Install grounding and bonding conductors concealed from view.

D. Install grounding well pipe with cover at rod locations as indicated on Drawings. Install well pipe top flush with finished grade.

E. Install 4 AWG unless noted otherwise bare copper wire in foundation footing.

F. Install grounding electrode conductor and connect to reinforcing steel in foundation footing as indicated on Drawings. Electrically bond steel together.

G. Bond together metal siding not attached to grounded structure; bond to ground.

H. Install ground grid under access floors. Construct grid of 4 AWG bare copper wire installed on 24 inch centers both ways. Bond each access floor pedestal to grid.

I. Install continuous grounding using building steel as grounding electrode. Install artificial station ground by means of driven rods or buried electrodes.

J. Permanently ground entire light and power system in accordance with NEC, including service equipment, distribution panels, lighting panelboards, switch and starter enclosures, motor frames, grounding type receptacles, and other exposed non-current carrying metal parts of electrical equipment.

K. Install branch circuits feeding isolated ground receptacles with separate insulated grounding conductor, connected only at isolated ground receptacle, ground terminals, and at ground bus of serving panel.

L. Accomplish grounding of electrical system by using insulated grounding conductor installed with feeders and branch circuit conductors in conduits. Size grounding conductors in accordance with NEC. Install from grounding bus of serving panel to ground bus of served panel, grounding screw of receptacles, lighting fixture housing, light switch outlet boxes or metal enclosures of service equipment. Ground conduits by means of grounding bushings on terminations at panelboards with installed conductor to grounding bus.

M. Ground electrical system using continuous metal raceway system enclosing circuit conductors in accordance with NEC.

N. Permanently attach equipment and grounding conductors prior to energizing equipment.

O. Except for connections to ground bus bars, all grounding conductor to conductor, conductor to ground rod and conductor to structure connections of #6 AWG and larger copper conductors shall be permanent exothermically welded connections. Copper grounding conductors spliced with exothermic connections shall be considered as a continuous conductor, as stated in NEC 250-64(c).

P. Attach grounds to ground bus bars before permanent building service is energized.

Q. Ground metal lighting poles, as shown on drawings and as required by NEC.

R. When installing exposed runs, attach ground wire neatly and firmly to walls.

S. Step-down transformer secondaries shall be grounded to the nearest electrical room ground bus bar. Also, bond the grounded conductor of the transformer to the nearest available point of the interior metal water piping system in the area served by the transformer in accordance with NEC Article 250-104.

T. Feeders to remote buildings shall have their equipment grounding conductors bonded in accordance with NEC Article 250-32.

U. The equipment grounding terminal bars of the normal and emergency electrical system panelboards that serve the same patient area shall be bonded together with an insulated continuous copper conductor not smaller than No. 8.

3.5 FIELD QUALITY CONTROL

A. See Division 1 for Quality Control Requirements and for execution of field inspecting, testing, adjusting, and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Grounding and Bonding: Perform inspections and tests listed in NETA ATS, Section 7.13.

D. Perform ground resistance testing in accordance with IEEE 142.

E. Perform continuity testing in accordance with IEEE 142.

F. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Conduit supports.
2. Formed steel channel.
3. Spring steel clips.
4. Sleeves.
5. Mechanical sleeve seals.
6. Firestopping relating to electrical work.
7. Firestopping accessories.
8. Equipment bases and supports.

1.2 REFERENCES

A. ASTM International:
1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

B. FM Global:
1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.

C. National Fire Protection Association:
1. NFPA 70 - National Electrical Code.

D. Underwriters Laboratories Inc.:
1. UL 263 - Fire Tests of Building Construction and Materials.
2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
3. UL 1479 - Fire Tests of Through-Penetration Firestops.
4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.
5. UL - Fire Resistance Directory.

E. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

1.3 DEFINITIONS

A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

A. Firestopping Materials: ASTM E119, ASTM E814, UL 263 and UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.
   1. Ratings may be 3-hours for firestopping in through-penetrations of 4-hour fire rated assemblies unless otherwise required by applicable codes.

B. Surface Burning: ASTM E84 and UL 723 with maximum flame spread / smoke developed rating of 25/450.

C. Firestop interruptions to fire rated assemblies, materials, and components.

1.5 PERFORMANCE REQUIREMENTS

A. Firestopping: Conform to UL for fire resistance ratings and surface burning characteristics.

B. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.6 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.

C. Product Data:
   1. Hangers and Supports: Submit manufacturers catalog data including load capacity.
   2. Firestopping: Submit data on product characteristics, performance and limitation criteria.

D. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.

E. Design Data: Indicate load carrying capacity of hangers and supports.

F. Manufacturer's Installation Instructions:
   1. Hangers and Supports: Submit special procedures and assembly of components.
   2. Firestopping: Submit preparation and installation instructions.

G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

H. Engineering Judgements: For conditions not covered by UL or WH listed designs, submit judgements by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.7 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: UL 1479 or ASTM E814 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
   1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.

2. Floor and Roof Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
   a. Floor Penetrations Within Wall Cavities: T-Rating is not required.

B. Through Penetration Firestopping of Non-Fire Rated Floor [and Roof] Assemblies: Materials to resist free passage of flame and products of combustion.
1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.
2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.

C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: ASTM E1966 or UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.

D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage (24.9 Pa) minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.

E. Surface Burning Characteristics: 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

F. Perform Work in accordance with requirements of local jurisdiction.

1.8 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum 3 years documented experience approved by manufacturer.

1.9 PRE-INSTALLATION MEETINGS

A. See Division 1 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.10 DELIVERY, STORAGE, AND HANDLING

A. See Division 1 for Product Storage and Handling Requirements.

B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.

C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.11 ENVIRONMENTAL REQUIREMENTS

A. See Division 1 Product Requirements: Environmental conditions affecting products on site.

B. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F (15 degrees C).

C. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

D. Provide ventilation in areas to receive solvent cured materials.

## PART 2 PRODUCTS

### 2.1 CONDUIT SUPPORTS

A. Manufacturers:
1. Allied Tube & Conduit Corp.
2. Electroline Manufacturing Company.
3. O-Z Gedney Co.
4. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.

C. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.

D. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.

E. Conduit clamps - general purpose: One hole malleable iron for surface mounted conduits.

### 2.2 FORMED STEEL CHANNEL

A. Manufacturers:
1. Allied Tube & Conduit Corp.
2. B-Line Systems.
3. Midland Ross Corporation, Electrical Products Division.
4. Unistrut Corp.
5. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Product Description: Galvanized 12 gage (2.8 mm) thick steel. With holes 1-1/2 inches (38 mm) on center.

### 2.3 SPRING STEEL CLIPS

A. Manufacturers:
1. Allied Tube & Conduit Corp.
2. B-Line Systems.
3. Midland Ross Corporation, Electrical Products Division.
4. Unistrut Corp.
5. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Product Description: Mounting hole and screw closure.

2.4 SLEEVES

A. Furnish sleeves and seals, including armored cable seals, of types, sizes, and materials with the following construction features.

B. Sleeves for Through Non-fire Rated Floors: 18 gage (1.2 mm) thick galvanized steel.

C. Sleeves for Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage thick galvanized steel.

D. Sleeves for Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.

E. Fire-stopping Insulation: Glass fiber type, non-combustible.

2.5 MECHANICAL SLEEVE SEALS

A. Manufacturers:
1. Thunderline Link-Seal, Inc.
2. NMP Corporation.
3. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.
4. Advance Products & Systems, Inc.
5. Calpico, Inc.
6. Metraflex Co.

B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.6 FIRESTOPPING

A. Manufacturers:
1. Dow Corning Corp.
2. Fire Trak Corp.
3. Hilti Corp.
4. International Protective Coating Corp.
5. 3M fire Protection Products.
6. Specified Technology, Inc.
7. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
1. Silicone Firestopping Elastomeric Firestopping: Single component silicone elastomeric compound and compatible silicone sealant.
2. Foam Firestopping Compounds: Single component foam compound.
3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
4. Fiber Stuffing and Sealant Firestopping: Composite of mineral fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.

6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.

C. Color: Dark gray.

2.7 FIRESTOPPING ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Dam Material: Permanent:
1. Mineral fiberboard.
2. Mineral fiber matting.
3. Sheet metal.
4. Plywood or particle board.
5. Alumina silicate fire board.

C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

D. General:
1. Furnish UL listed products or products tested by independent testing laboratory.
2. Select products with rating not less than rating of wall or floor being penetrated.

E. Non-Rated Surfaces:
1. Stamped steel, chrome plated, hinged, split ring escutcheons or floor plates or ceiling plates for covering openings in occupied areas where conduit is exposed.
2. For exterior wall openings below grade, furnish modular mechanical type seal consisting of interlocking synthetic rubber links shaped to continuously fill annular space between conduit and cored opening or water-stop type wall sleeve.

PART 3 EXECUTION

3.1 EXAMINATION

A. See Division 1 Administrative Requirements: Verification of existing conditions before starting work.

B. Verify openings are ready to receive sleeves.

C. Verify openings are ready to receive firestopping.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.

B. Remove incompatible materials affecting bond.

C. Install backing and damming materials to arrest liquid material leakage.

D. Do not drill or cut structural members.

3.3 INSTALLATION - HANGERS AND SUPPORTS

A. Anchors and Fasteners:
1. Concrete Structural Elements: Provide precast inserts, expansion anchors and preset inserts.
2. Steel Structural Elements: Provide beam clamps and welded fasteners.
3. Concrete Surfaces: Provide self-drilling anchors and expansion anchors.
4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts and hollow wall fasteners.
5. Solid Masonry Walls: Provide expansion anchors and preset inserts.
6. Sheet Metal: Provide sheet metal screws.
7. Wood Elements: Provide wood screws.

B. Inserts:
1. Install inserts for placement in concrete forms.
2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut recessed into and grouted flush with slab.

C. Install conduit and raceway support and spacing in accordance with NEC.

D. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.

E. Install multiple conduit runs on common hangers.

F. Supports:
1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
2. Install surface mounted cabinets and panelboards with minimum of four anchors.
3. In wet and damp locations install steel channel supports to stand cabinets and panelboards 1 inch (25 mm) off wall.
4. Support vertical conduit at every floor.

G. Placement of Hangers and Supports onto structural steel shall be coordinated with the structural engineer.

3.4 INSTALLATION - FIRESTOPPING

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating.

D. Compress fibered material to maximum 40 percent of its uncompressed size.

E. Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.

F. Place intumescent coating in sufficient coats to achieve rating required.

G. Remove dam material after firestopping material has cured.

H. Fire Rated Surface:
   1. Seal opening at floor, wall, partition, ceiling, and roof as follows:
      a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.
      b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.
      c. Pack void with backing material.
      d. Seal ends of sleeve with UL listed fire resistive silicone compound to meet fire rating of structure penetrated.
   2. Where cable tray, bus, cable bus, conduit, wireway, or trough, penetrates fire rated surface, install firestopping product in accordance with manufacturer's instructions.

I. Non-Rated Surfaces:
   1. Seal opening through non-fire rated wall, partition, floor, ceiling, and roof opening as follows:
      a. Install sleeve through opening and extending beyond minimum of 1 inch (25 mm) on both sides of building element.
      b. Size sleeve allowing minimum of 1 inch (25 mm) void between sleeve and building element.
      c. Install type of firestopping material recommended by manufacturer.
   2. Install escutcheons floor plates or ceiling plates where conduit, penetrates non-fire rated surfaces in occupied spaces. Occupied spaces include rooms with finished ceilings and where penetration occurs below finished ceiling.
   3. Exterior wall openings below grade: Assemble rubber links of mechanical seal to size of conduit and tighten in place, in accordance with manufacturer's instructions.

## 3.5 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

A. Provide housekeeping pads of concrete, minimum 3-1/2 inches (87 mm) thick and extending 6 inches (150 mm) beyond supported equipment. Refer to Section 03 30 00.

B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.

C. Construct supports of formed steel channel. Brace and fasten with flanges bolted to structure.

## 3.6 INSTALLATION - SLEEVES

A. Exterior watertight entries: Seal with adjustable interlocking rubber links.

B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.

C. Set sleeves in position in forms. Provide reinforcing around sleeves.

D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.

E. Extend sleeves through floors 1 inch above finished floor level. Caulk sleeves.

F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.

G. Install chrome plated steel escutcheons at finished surfaces.

3.7 FIELD QUALITY CONTROL

A. See Division 1 for Quality Control Requirements and for execution of field inspecting, testing, adjusting, and balancing.

B. Inspect installed firestopping for compliance with specifications.

3.8 CLEANING

A. See Division 1 Execution and Closeout Requirements: Requirements for cleaning.

B. Clean adjacent surfaces of firestopping materials.

3.9 PROTECTION OF FINISHED WORK

A. See Division 1 for Execution and Closeout Requirements for protecting installed construction.

B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 26 05 33

RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.

B. Related Sections:
1. Section 26 05 03 - Equipment Wiring Connections.
2. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
3. Section 26 05 29 - Hangers and Supports for Electrical Systems.
4. Section 26 05 53 - Identification for Electrical Systems.
5. Section 26 27 16 - Electrical Cabinets and Enclosures.
6. Section 26 27 26 - Wiring Devices.

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
3. ANSI C80.5 - Aluminum Rigid Conduit - (ARC).

B. National Electrical Manufacturers Association:
1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.3 SYSTEM DESCRIPTION

A. Raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway to complete wiring system.

B. Underground: Provide thickwall nonmetallic conduit. Provide cast metal boxes or nonmetallic handhole.

C. In or Under Slab on Grade: Provide thickwall nonmetallic conduit. Provide cast or nonmetallic metal boxes.

D. Outdoor Locations, Above Grade: Provide rigid steel and aluminum conduit, intermediate metal conduit and electrical metallic tubing. Provide cast metal or nonmetallic outlet, pull, and junction boxes.

E. In Slab Above Grade: Provide rigid steel conduit, intermediate metal conduit and electrical metallic tubing. Provide sheet metal boxes.

F. Wet and Damp Locations: Provide rigid steel and aluminum conduit, intermediate metal conduit, electrical metallic tubing, and MC cable. Provide cast metal or nonmetallic outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.

G. Concealed Dry Locations: Provide rigid steel and aluminum conduit, intermediate metal conduit and, electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

H. Exposed Dry Locations: Provide rigid steel and aluminum conduit, intermediate metal conduit, and electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

1.4 DESIGN REQUIREMENTS

A. Minimum Raceway Size: 1/2 inch unless otherwise specified. All homeruns to panelboards shall be minimum size ¾ inch.

1.5 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Product Data: Submit for the following:
1. Metal Conduit.
2. Flexible metal conduit.
3. Liquidtight flexible metal conduit.
4. Electrical Magnetic Tubing.
5. Nonmetallic conduit.
6. Raceway fittings.
7. Conduit bodies.
8. Wireway.
9. Pull and junction boxes.
10. Handholes.

C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.6 CLOSEOUT SUBMITTALS

A. See Division 1: Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents:
1. Record actual routing of conduits larger than 2 inch.
2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.7 DELIVERY, STORAGE, AND HANDLING

A. See Division 1: Product Requirements: Product storage and handling requirements.

B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

C. Protect PVC conduit from sunlight.

1.8 COORDINATION

A. See Division 1: Administrative Requirements: Coordination and project conditions.

B. Coordinate installation of outlet boxes for equipment connected under Section 26 05 03.

C. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

PART 2 PRODUCTS

2.1 METAL CONDUIT

A. Rigid Steel Conduit: ANSI C80.1.

B. Rigid Aluminum Conduit: ANSI C80.5.

C. Intermediate Metal Conduit (IMC): Rigid steel.

D. Fittings and Conduit Bodies: NEMA FB 1; all steel fittings.

2.2 FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction.

B. Fittings: NEMA FB 1.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

A. Product Description: Interlocked steel construction with PVC jacket.

B. Fittings: NEMA FB 1.

2.4 ELECTRICAL METALLIC TUBING (EMT)

A. Product Description: ANSI C80.3; galvanized tubing.

B. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron, compression set screw type.

2.5 NONMETALLIC CONDUIT

A. Product Description: NEMA TC 2; Schedule 40 and 80 PVC.

B. Fittings and Conduit Bodies: NEMA TC 3.

2.6 OUTLET BOXES

A. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
   1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; furnish 1/2 inch (13 mm) male fixture studs where required.
   2. Concrete Ceiling Boxes: Concrete type.

B. Nonmetallic Outlet Boxes: NEMA OS 2.

C. Cast Boxes: NEMA FB 1, Type FD, cast feralloy. Furnish gasketed cover by box manufacturer. Furnish threaded hubs.

D. Wall Plates for Finished Areas: As specified in Section 26 27 26.

E. Wall Plates for Unfinished Areas: Furnish gasketed cover.

2.7 PULL AND JUNCTION BOXES

A. Sheet Metal Boxes: NEMA OS 1, galvanized steel.

B. Hinged Enclosures: As specified in Section 26 27 16.

C. Concrete composite Handholes: Concrete composite hand holes:
1. Cable Entrance: Pre-cut 6 inch x 6 inch (150 mm x 150 mm) cable entrance at center bottom of each side.
2. Cover: Concrete composite, weatherproof cover with nonskid finish.
3. Cover Legend: “Electric”.

PART 3 EXECUTION

3.1 EXAMINATION

A. See Division 1 Administrative Requirements: Coordination and project conditions.

B. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 EXISTING WORK

A. Remove exposed abandoned raceway, including abandoned raceway above accessible ceiling finishes. Cut raceway flush with walls and floors, and patch surfaces.

B. Remove concealed abandoned raceway to its source.

C. Disconnect abandoned outlets and remove devices. Remove abandoned outlets when raceway is abandoned and removed. Install blank cover for abandoned outlets not removed.

D. Maintain access to existing boxes and other installations remaining active and requiring access. Modify installation or provide access panel.

E. Extend existing raceway and box installations using materials and methods as specified.

F. Clean and repair existing raceway and boxes to remain or to be reinstalled.

3.3 INSTALLATION

A. Ground and bond raceway and boxes in accordance with Section 26 05 26.

B. Fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.

C. Identify raceway and boxes in accordance with Section 26 05 53.

D. Arrange raceway and boxes to maintain headroom and present neat appearance.

E. Conceal raceway except in mechanical or utility areas and where noted exposed.

3.4 INSTALLATION - RACEWAY

A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system.

B. Arrange raceway supports to prevent misalignment during wiring installation.

C. Support raceway using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.

D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 26 05 29; provide space on each for 25 percent additional raceways.

E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports

F. Do not attach raceway to ceiling support wires or other piping systems.

G. Construct wireway supports from steel channel specified in Section 26 05 29.

H. Route exposed raceway parallel and perpendicular to walls.

I. Paint all exposed raceway in public accessible areas to match adjacent surface.

J. All exposed raceway in public accessible areas shall be EMT.

K. Route raceway installed above accessible ceilings parallel and perpendicular to walls.

L. Route conduit in and under slab from point-to-point.

M. Maximum Size Conduit in Slab Above Grade: 3/4 inch. Do not cross conduits in slab.

N. Maintain clearance between raceway and piping for maintenance purposes.

O. Maintain 12 inch (300 mm) clearance between raceway and surfaces with temperatures exceeding 104 degrees F (40 degrees C).

P. Cut conduit square using saw or pipe cutter; de-burr cut ends.

Q. Bring conduit to shoulder of fittings; fasten securely.

R. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.

S. Install conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.

T. Install no more than equivalent of three 90 degree bends between boxes. Install conduit bodies to make sharp changes in direction, as around beams. Install hydraulic one-shot bender to fabricate or factory elbows for bends in metal conduit larger than 2 inch (50 mm) size.

U. Avoid moisture traps; install junction box with drain fitting at low points in conduit system.

V. Install fittings to accommodate expansion and deflection where raceway crosses seismic, control and expansion joints.

W. Install suitable pull string or cord in each empty raceway except sleeves and nipples.

X. Install suitable caps to protect installed conduit against entrance of dirt and moisture.

Y. Close ends and unused openings in wireway.

3.5 INSTALLATION - BOXES

A. Install wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings and as specified in section for outlet device.

B. Adjust box location up to 10 feet prior to rough-in to accommodate intended purpose.

C. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.

D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

E. In Accessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.

F. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

G. Do not install flush mounting box back-to-back in walls; install with minimum 6 inches (150 mm) separation. Install with minimum 24 inches (600 mm) separation in acoustic rated walls.

H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

I. Install stamped steel bridges to fasten flush mounting outlet box between studs.

J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

K. Install adjustable steel channel fasteners for hung ceiling outlet box.

L. Do not fasten boxes to ceiling support wires or other piping systems.

M. Support boxes independently of conduit.

N. Install gang box where more than one device is mounted together. Do not use sectional box.

O. Install gang box with plaster ring for single device outlets.

3.6 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods in accordance with Division 1.

B. Locate outlet boxes to allow luminaires positioned as indicated on Drawings.

C. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.7 ADJUSTING

A. See Division 1 Execution and Closeout Requirements: Testing, adjusting, and balancing.

B. Adjust flush-mounting outlets to make front flush with finished wall material.

C. Install knockout closures in unused openings in boxes.

3.8 CLEANING

A. See Division 1 Execution and Closeout Requirements: Final cleaning.

B. Clean interior of boxes to remove dust, debris, and other material.

C. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Nameplates.
2. Labels.
3. Wire markers.
4. Conduit markers.
5. Stencils.
6. Underground Warning Tape.
7. Lockout Devices.

B. Related Sections:
1. Division 1 - Painting and Coating: Execution requirements for painting specified by this section.

1.2 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Product Data:
1. Submit manufacturer’s catalog literature for each product required.
2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.

C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

1.3 CLOSEOUT SUBMITTALS

A. See Division 1 Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum three years documented experience approved by manufacturer.

1.5 DELIVERY, STORAGE, AND HANDLING

A. See Division 1 Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept identification products on site in original containers. Inspect for damage.

C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.

D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.6 ENVIRONMENTAL REQUIREMENTS

A. See Division 1 Product Requirements: Environmental conditions affecting products on site.

B. Install labels and nameplates only when ambient temperature and humidity conditions for adhesive are within range recommended by manufacturer.

PART 2 PRODUCTS

2.1 NAMEPLATES

A. Product Description: Laminated three-layer plastic with engraved black letters on white contrasting background color.

B. Letter Size:
1. 1/8 inch high letters for identifying individual equipment and loads.
2. 1/4 inch high letters for identifying grouped equipment and loads.

C. Minimum nameplate thickness: 1/8 inch.

2.2 LABELS

A. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background.

2.3 WIRE MARKERS

A. Description: Split sleeve or tubing type wire markers.

B. Legend:
1. Power and Lighting Circuits: Branch circuit or feeder number as indicated on Drawings.
2. Control Circuits: Control wire number as indicated on schematic and interconnection diagrams and shop drawings.

2.4 CONDUIT AND RACEWAY MARKERS

A. Description: Colored tape or paint to identify conduit by system. Adhesive label to identify conduit by voltage, width of color band to be minimum of 1” wide.
1. Medium Voltage System: Black lettering on white background.
2. 480 Volt System: Black lettering on white background.
3. 240/208 Volt System: Black lettering on white background.
4. Non-Emergency Power: Yellow.
5. Security: Purple.
6. Communication: Light Blue.
7. Fire Alarm System: Red.
8. Motor and Other Control Systems: Orange/Blue.
9. Telephone System: Black.
10. Emergency Power: Yellow/Red.
11. Category 5 Cable: Light Green.
12. Fiber Optic Cable: Dark Green.

B. Legend:
   1. Medium Voltage System: HIGH VOLTAGE 4160/2400V.
   2. 480 Volt System: 480 VOLTS. HIGH VOLTAGE.
   3. 208 Volt System: 208 VOLTS.
   4. 240 Volt System: 240 VOLTS.

2.5 UNDERGROUND WARNING TAPE

A. Description: 4 inch wide plastic tape, detectable type, colored red with suitable warning legend describing buried electrical lines.

2.6 LOCKOUT DEVICES

A. Lockout Hasps:
   1. Reinforced nylon hasp with erasable label surface; size minimum 7-1/4 x 3 inches (184 x 75 mm).

PART 3 EXECUTION

3.1 PREPARATION

A. Degrease and clean surfaces to receive adhesive for identification materials.

B. Prepare surfaces in accordance with Division 1 for stencil painting.

3.2 EXISTING WORK

A. Install identification on existing equipment to remain in accordance with this section.

B. Install identification on unmarked existing equipment.

C. Replace lost nameplates and labels.

D. Re-stencil existing equipment.

E. Paint conduits to identify system.

3.3 INSTALLATION

A. Install identifying devices after completion of painting.

B. Nameplate Installation:
   1. Install nameplate parallel to equipment lines.
   2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, do not use adhesive.
   3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners.
   4. Secure nameplate to equipment front using screws or rivets.
   5. Secure nameplate to inside surface of door on recessed panelboard in finished locations with adhesive.
   6. Install nameplates for the following:
      a. Switchboards.
      b. Panelboards.
      c. Transformers.
      d. Service Disconnects.

C. Label Installation:
   1. Install label parallel to equipment lines.
   2. Install label for identification of individual control device stations, receptacles and data outlets.
   3. Install labels for permanent adhesion and seal with clear lacquer.

D. Wire Marker Installation:
   1. Install wire marker for each conductor at panelboard gutters; pull boxes, outlet and junction boxes and each load connection.
   2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
   3. Install labels at data outlets identifying patch panel and port designation.

E. Raceway Marker Installation:
   1. Install raceway marker for each raceway longer than 6 feet.
   2. Raceway Marker Spacing: 50 feet on center.
   3. Raceway Painting: Identify conduit using field painting in accordance with Division 1.
      a. Paint each conduit longer than 6 feet.
      b. Paint bands 50 feet on center.

F. Stencil Installation:
   1. Apply stencil painting in accordance with Division 1.

G. Underground Warning Tape Installation:
   1. Install underground warning tape along length of each underground conduit, raceway, or cable 6 to 8 inches (150 to 200 mm) below finished grade, directly above buried conduit, raceway, or cable and at 6 inches above conduit when installed deeper than 24 inches.

END OF SECTION

SECTION 26 24 16

PANELBOARDS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes distribution and branch circuit panelboards, electronic grade branch circuit panelboards, and load centers.

B. Related Sections:
1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
2. Section 26 05 53 - Identification for Electrical Systems.

1.2 REFERENCES

A. Institute of Electrical and Electronics Engineers:
1. IEEE C62.41 - Recommended Practice on Surge Voltages in Low-Voltage AC Power Circuits.

B. National Electrical Manufacturers Association:
1. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
2. NEMA FU 1 - Low Voltage Cartridge Fuses.
3. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contactors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
4. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.
5. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).
6. NEMA PB 1 - Panelboards.
7. NEMA PB 1.1 - General Instructions for Proper Installation, Operation, and Maintenance of Panelboards Rated 600 Volts or Less.

C. International Electrical Testing Association:
1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

D. National Fire Protection Association:
1. NFPA 70 - National Electrical Code.

E. Underwriters Laboratories Inc.:
1. UL 67 - Safety for Panelboards.
2. UL 1283 - Electromagnetic Interference Filters.
3. UL 1449 - Transient Voltage Surge Suppressors.

1.3 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker and fusible switch arrangement, sizes, and accessories.

C. Product Data: Submit catalog data showing specified features of standard products.

1.4 CLOSEOUT SUBMITTALS

A. See Division 1 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record actual locations of panelboards and record actual circuiting arrangements.

C. Operation and Maintenance Data: Submit spare parts listing; source and current prices of replacement parts and supplies; and recommended maintenance procedures and intervals.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.6 MAINTENANCE MATERIALS

A. See Division 1 - Execution and Closeout Requirements: Requirements for maintenance products.

B. Furnish two of each panelboard key. Panelboards keyed alike.

PART 2 PRODUCTS

2.1 BRANCH CIRCUIT PANELBOARDS

A. Manufacturers:
1. Cutler Hammer.
2. General Electric.
3. Siemens.
4. Square D.
5. Substitutions: See Division 1 for Product Requirements and Substitution Procedures.

B. Product Description: NEMA PB1, circuit breaker type, lighting and appliance branch circuit panelboard.

C. Panelboard Bus: Copper, current-carrying components, ratings as indicated on Drawings. Furnish copper ground bus in each panelboard; furnish insulated ground bus as indicated on Drawings.

D. Minimum Integrated Short Circuit Rating: 22,000 amperes rms symmetrical for 208 volt panelboards; 14,000 amperes rms symmetrical for 480 volt panelboards, or as indicated on Drawings.

E. Molded Case Circuit Breakers: NEMA AB 1, bolt-on type thermal magnetic trip circuit breakers, with common trip handle for all poles, listed as Type SWD for lighting circuits, Type HACR for air conditioning equipment circuits, Class A ground fault interrupter circuit breakers as indicated on Drawings. Do not use tandem circuit breakers.

F. Enclosure: Flush mounted, NEMA PB 1, Type 1.

G. Cabinet Box: Minimum 5-3/4 inches deep, 20 inches wide. Minimum 16-guage.

H. Cabinet Front: Flush cabinet front with concealed trim clamps, concealed hinge, metal directory frame, and flush lock keyed alike. Finish in manufacturer's standard gray enamel.

I. Cabinet trim shall be painted to match adjacent suface.

## PART 3 EXECUTION

### 3.1 EXISTING WORK

A. Disconnect abandoned panelboards and load centers. Remove abandoned panelboards and load centers.

B. Maintain access to existing panelboard and load centers remaining active and requiring access. Modify installation or provide access panel.

C. Clean and repair existing panelboards and load centers to remain or to be reinstalled.

### 3.2 INSTALLATION

A. Install panelboards in accordance with NEMA PB 1.1.

B. Install panelboards plumb.

C. Install recessed panelboards flush with wall finishes.

D. Height: 6 feet (1800 mm) to top of panelboard; install panelboards taller than 6 feet (1800 mm) with bottom no more than 4 inches (100 mm) above floor.

E. Install filler plates for unused spaces in panelboards.

F. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes to balance phase loads.

G. Install engraved plastic nameplates in accordance with Section 26 05 53.

H. Install spare conduits out of each recessed panelboard to accessible location above ceiling. Minimum spare conduits: 3 empty 1 inch. Identify each as SPARE.

I. Ground and bond panelboard enclosure according to Section 26 05 26. Connect equipment ground bars of panels in accordance with NFPA 70.

### 3.3 FIELD QUALITY CONTROL

A. See Division 1 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect and test in accordance with NETA ATS, except Section 4.

C. Perform circuit breaker inspections and tests listed in NETA ATS, Section 7.6.

D. Perform switch inspections and tests listed in NETA ATS, Section 7.5.

E. Perform controller inspections and tests listed in NETA ATS, Section 7.16.1.

3.4 ADJUSTING

A. See Division 1 - Execution and Closeout Requirements: Requirements for starting and adjusting.

B. Measure steady state load currents at each panelboard feeder; rearrange circuits in panelboard to balance phase loads to within 20 percent of each other. Maintain proper phasing for multi-wire branch circuits.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes wall switches; wall dimmers; receptacles; multioutlet assembly; occupancy sensors; device plates; decorative box covers.

B. Related Sections:
1. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.

1.2 REFERENCES

A. National Electrical Manufacturers Association:
1. NEMA WD 1 - General Requirements for Wiring Devices.
2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

A. See Division 1 for Submittal Procedures.

B. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.5 EXTRA MATERIALS

A. See Division 1 - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two of each style, size, and finish for wall plate, switch, and receptacle.

1.6 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:
1. IEEE Compliance:
a. IEEE Standard 241.
2. Underwriters' Laboratories, Inc. (UL).
a. UL 20, 486A, 498, 508 and 943.

B. Reference Standards:
1. National Electrical Manufacturers Association (NEMA):
a. NEMA Standards Publication / No. WD 1, WD 2, WD 5.
2. National Electrical Contractors Association (NECA):
a. NECA – Standard of Installation.

C. Material and equipment shall be new and conform to grade, quality and standards specified. Equipment or materials of the same type shall be the product of same manufacturer throughout.

D. The manufacturer's catalog numbers specified represent the minimum standards required. If products of alternative manufacturers are selected from the approved manufacturer's list, they must be equal to or exceed the standards and performance criteria set forth.

E. All supplied wiring devices shall be by a single manufacturer.

## PART 2 PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

A. The listing of a manufacturer as "acceptable" does not imply automatic approval. It is the sole responsibility of the Contractor to ensure that any submittals made are for products that meet or exceed the specifications included here.
   1. Cooper
   2. Hubbell Inc.
   3. Leviton.
   4. Pass and Seymour.

### 2.2 GENERAL

A. Provide factory-fabricated wiring devices in type, color, and electrical rating for service indicated.

B. See Symbol Schedule on drawings for identification of device type.

### 2.3 DEVICE COLORS

A. Devices circuited from normal power panels shall be Ivory in color.

B. Devices circuited from emergency power panels shall be red in color.

### 2.4 GENERAL

A. Terminal screws shall be back and side wired and accept #14, 12, and #10 AWG stranded or solid wire.

B. A full wrap-around bridge strap shall be provided with locking tabs to secure receptacle face.

C. Receptacle face shall be impact resistant nylon.

### 2.5 RECEPTACLES

A. Duplex:
   1. Provide residential grade receptacles, 2 pole, 3 wire, grounding, 15 ampere, 125 volts, with NEMA configuration 5-15R unless otherwise indicated.
      a. Cooper – CR5362
      b. Pass & Seymour – CRB5362
      c. Hubbell – CR5362
      d. Leviton – 5362S

   2. Tamper resistant safety type receptacles shall be
      a. Cooper – TR5350

B. Ground-Fault Circuit Interrupters:
1. Provide ground fault circuit interrupter, duplex receptacles, capable of being installed in a 2-1/2 inch deep outlet box without adapter. Shall be grounding type UL-rated Class A, Group 1, rated 15 amperes, 120 volts, 60 Hz; with solid-state ground fault sensing and signaling; with 5 milliamperes ground fault trip level. Equip with NEMA configuration 5-15R receptacle.
a. Test and reset buttons shall match color of face.
b. GFCI receptacles shall meet 2003 UL requirements.
c. If critical components within receptacle are damaged and the ground fault protection is lost, power to receptacle shall be automatically disconnected within the device.
1) Cooper – VGF15
2) Pass & Seymour – 1594
3) Hubbell – GFR5252A
4) Leviton - 8599

2.6 SWITCHES

A. General:
1. Switches shall be rated for 15 amperes for guestrooms (apartment rooms), 120/277 volts AC, and shall be manufacturer's specification grade toggle switch with thermoplastic abuse resistant toggle, quiet action, and heavy duty contact arm.
2. Switches shall have quiet action mechanism with silver alloy contacts for longevity.
3. Terminal screws shall be back and side wire and accept #14, 12, and 10 AWG stranded or solid wire.
4. Switches shall have a backwire pressure plate ground screw mechanism accepting #14, 12, and 10 AWG stranded or solid wire.

B. Single Pole:
1. Cooper CSB120
2. Pass & Seymour – CSB20AC1
3. Hubbell – CS1201
4. Leviton – CSB1-15

C. Three Way:
1. Cooper – CSB315
2. Pass & Seymour –CSB15AC3
3. Hubbell – CS1203
4. Leviton – CSB3-15

2.7 DIMMERS – WALL BOX

A. Incandescent Lamp:
1. Provide branch lighting solid-state AC dimmer controls for incandescent fixtures; wattage as indicated, 120 volts, 60 Hz single pole. Equip with electromagnetic filters to eliminate noise, RF and TV interference, and with 6 inch wire connecting leads. Do not remove fins.
a. Lutron (slide to off) type Nova NT series or equal for line voltage incandescent lamps.
b. Lutron (slide to off) Nova NTLV series or equal for low voltage incandescent lamps.
c. Provide wattage as indicated on drawings.

2.8 WIRING DEVICE ACCESSORIES

A. Wall Plates:
1. Provide wall plates for single and combination wiring devices, of types, sizes, and with ganging and cutouts as indicated. Select plates which mate and match wiring devices to which attached. Construct with metal screws for securing plates to devices; screw heads colored to match finish of plates; wall plates colored to match wiring devices. Provide plates possessing the following additional construction features:
a. Material and Finish:
1) Nylon, smooth – color to match device.
2. Device plates for surface mounted Type FS or FD boxes: Type FSK galvanized steel covers.
3. Device plates for surface mounted, 4 in. square boxes: ½ in. raised galvanized steel covers.

B. Weatherproof Covers:
1. Weatherproof covers for all 125-250 volt, 15 and 20 ampere receptacles installed outdoors in a wet location shall be weatherproof, NEMA 3R, with hinged outlet enclosure rated for rain proof protection while outlet is in use. The unit shall be furnished with a neoprene gasket between the mounting surface and the enclosure, and between the mounting plate and the hinged cover to assure proper seal.
a. Public Spaces
1) Shall be equal to:
a) Tay Mac - ML400G.
(1) Available for use in building walls and standalone installations.
b) Intermatic – WP1000RC.
(1) Only use for flush mounting in building walls.
c) Pass & Seymour – WIUFC10S.
(1) Only available for flush mounting in non-CMU walls
b. Non-Public Spaces
1) Shall be equal to:
a) Intermatic, Die Cast with GFI mounting plate, horizontal mount (duplex), Catalog #WP1010HMC, vertical mount (quad), Catalog #WP1030MC.
2. Weatherproof covers for all other receptacles shall be cast aluminum with a gasketed cover. Shall be equal to Hubbell CWP26H (standard flush box) or Hubbell WPFS26 (surface FS box).

PART 3 EXECUTION

3.1 EXAMINATION

A. See Division 1 - Administrative Requirements: Coordination and project conditions.

B. Verify outlet boxes are installed at proper height.

C. Verify wall openings are neatly cut and completely covered by wall plates.

D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

A. Clean debris from outlet boxes.

3.3 EXISTING WORK

A. Disconnect and remove abandoned wiring devices.

B. Modify installation to maintain access to existing wiring devices to remain active.

C. Clean and repair existing wiring devices to remain or to be reinstalled.

3.4 INSTALLATION

A. Install devices plumb and level. Do not install devices until wiring is complete. Clean electrical boxes of dirt and debris.

B. Install switches with OFF position down.

C. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.

D. Do not share neutral conductor on load side of dimmers.

E. Install receptacles with grounding pole on bottom.

F. Connect wiring device grounding terminal to outlet box with bonding jumper and branch circuit equipment grounding conductor. Isolated ground receptacles shall have the second ground wire (green with yellow tracer) ground the receptacle.

G. Install decorative plates on switch, receptacle, and blank outlets in finished areas. Do not install until after painting is complete.

H. Do not use terminals on wiring devices (hot or neutral) for feed thru connections, looped or otherwise. Make circuit connections via wire connectors and pigtails.

I. Use jumbo size plates for outlets installed in masonry walls.

J. Install galvanized steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

K. Install in accordance with manufacturer's written instructions, applicable requirements of NEC and NECA's "Standard of Installation" and in accordance with recognized industry practices.

L. Mount switches and receptacles in vertical position in building interiors.

M. All exterior receptacles shall be GFI type mounted in weatherproof boxes.

3.5 INTERFACE WITH OTHER PRODUCTS

A. Coordinate locations of outlet boxes provided under Section 26 05 33 to obtain mounting heights as specified and as indicated on drawings.

B. Install wall switch per ADA guidelines.

C. Install convenience receptacle per ADA guidelines.

D. Install convenience receptacle per ADA guidelines.

E. Install dimmer per ADA guidelines.

F. Mount receptacles with weatherproof plates in horizontal position.

G. Install gasket plates for devices or system components having light emitting features, such as switch with pilot light and dome lights. Where installed on rough textured surfaces, seal with black self adhesive poly-foam.

H. This Contractor shall check the switch location against the Architectural plans and shop drawings to be certain that switches are on the strike side of the door, regardless of swing shown on drawings. Edge of plate shall be not more than 12” from door frame.

I. Provide wiring device cover plates identifying device circuit numbers as outlined in specification 26 05 53.

J. Ground-fault circuit interrupter type receptacles may provide GFI protection for downstream receptacles on same circuit only where located in same room as other receptacles.

K. Provide tamper resistant duplex receptacle in areas described by NEC 210.52.

L. New outlets or relocated outlets shall be protected by arc-fault circuit-interrupter protection in the following areas: family room, dining room, living room, parlor, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways or similar rooms or areas. Either provide AFCI protected overcurrent device in serving panelboard or provide AFCI type receptacle to comply.

3.6 FIELD QUALITY CONTROL

A. See Division 1 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Inspect each wiring device for defects.

C. Operate each wall switch with circuit energized and verify proper operation.

D. Verify each receptacle device is energized.

E. Test each receptacle with Hubbell 5200, Woodhead 1750, or equal, for correct polarity, proper ground connection, and wiring faults.

F. Test each GFCI receptacle device for proper operation.

G. Provide a grounding system test in accordance with NFPA 99 for all receptacles in patient care areas.

3.7 ADJUSTING

A. See Division 1 - Execution and Closeout Requirements: Testing, adjusting, and balancing.

B. Adjust devices and wall plates to be flush and level.

3.8 CLEANING

A. See Division 1 - Execution and Closeout Requirements: Final cleaning.

B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION

SECTION 26 51 00

INTERIOR LIGHTING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes interior luminaires, lamps, ballasts, and accessories.

B. Related Sections:
1. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
2. Section 26 05 33 - Raceway and Boxes for Electrical Systems.

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI C82.1 - American National Standard for Lamp Ballast-Line Frequency Fluorescent Lamp Ballast.
2. ANSI C82.4 - American National Standard for Ballasts-for High-Intensity-Discharge and Low-Pressure Sodium Lamps (Multiple-Supply Type).
3. ANSI C78.379 – Electric Lamps – Incandescent and High-Intensity Discharge Reflector Lamps – Classification of Beam Patterns.
4. ANSI/NFPA 70 – National Electrical Code.
5. ANSI/NFPA 101 – Life Safety Code.
6. NEMA WD 6 – Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

A. See Division 1 - Submittal Procedures: Submittal procedures.

B. Submit catalog literature for each fixture specified in booklet form with index and a separate sheet for each fixture, assembled in fixture “type” alphabetical order, with specified fixture manufacturer’s printed data. Each submittal shall clearly describe materials, type of diffuser, hardware, gasketing, reflector and chassis, finish, ballast and lamp to be used.

C. Contractor shall provide submittals for light fixtures as indicated in the Lighting Fixture Schedule. No substitutions are allowed. Where an alternate manufacturer is indicated for a specific fixture with no catalog number indicated for the alternate manufacturer, provide alternate fixture that is equal in all characteristics as the cataloged fixture.

D. Excessive delivery times shall not be an acceptable cause for substitution of specified fixtures. Notify Architect/Engineer of any long lead fixtures that may impact project schedule within two weeks of contract award. Beyond two weeks the contractor is responsible for any costs associated with expediting the manufacturing process of the specified fixture and/or cost associated with an approved substitute fixture if allowed by Architect/Engineer.

E. Submit ballast catalog data indicating lamp wattage, input watts, sound rating, power factor, ballast factor, and type of ballast for each similar fixture type.

F. Submit manufacturer’s printed data for lamps indicating lamp life, CRI, degrees Kelvin, etc. for each similar fixture type.

G. Submit photometric data if different than that specified and requested by Engineer.

H. Submit a sample fixture if different than that specified and requested by Engineer.

I. Samples: Submit two color chips 3 x 3 inch (75 x 75mm) in size illustrating luminaire finish color where indicated in luminaire schedule.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Fixtures as specified in “Lighting Fixture Schedule” establish a standard of quality for project as determined by Engineer.

C. Equivalency of fixtures is determined by Engineer and includes the following data for comparative purposes:
1. Efficiency.
2. Efficacy.
3. Distribution.
4. Construction.
5. Design compatibility.
6. Manufacturer reliability based upon past performances.

D. Fixtures shall conform to UL requirements and bear UL label and manufacturer’s name.

1.5 PRODUCT STORAGE AND HANDLING

A. Handle lighting fixtures carefully to prevent breakage, denting, and scoring finish.

B. Do not install damaged lighting fixtures.

C. Do not repair damaged fixtures; replace and return damaged units to equipment manufacturer for replacement.

D. Store lighting fixture in a clean, dry space. Store in original cartons and protect from dirt, physical damage, weather, and construction traffic.

1.6 JOB CONDITIONS

A. Contractor shall determine that ceiling channel system is adequately supported to receive and support his lighting fixtures. Where deemed inadequate, do not install fixtures until additional support has been provided.

B. Verify local codes and ordinances that may pertain to fixture limitations, installation and aiming of exterior fixtures. Notify Engineer prior to Bid time if problems are encountered.

1.7 FIELD MEASUREMENTS

A. Verify field measurements prior to fabrication.

1.8 MAINTENANCE MATERIALS

A. See Division 1 - Execution and Closeout Requirements: Spare parts and maintenance products.

B. Furnish two of each plastic lens type.

C. Furnish six replacement lamps for each lamp type installed.

D. Furnish two of each ballast type.

## PART 2 PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

A. The listing of a manufacturer as “acceptable” does not imply automatic approval. It is the sole responsibility of the Contractor to ensure that any submittals made are for products that meet or exceed the specifications included herein and listed in the Lighting Fixture Schedule.

### 2.2 LIGHTING FIXTURES

A. Provide lighting fixtures of the size, type, and rating indicated in “Lighting Fixture Schedule,” complete with, but not necessarily limited to, lamps, lampholders, reflectors, ballasts, starters, wiring and any other accessories required for a complete working installation.

B. Refer to Lighting Fixture Schedule on drawings.

C. Fixture catalog numbers do not necessarily include all accessories and are intended to serve as a guide in defining types and manufacturers of unit only.

D. Fixtures shall meet UL 1598 requirements. The appropriate UL label or listing will be acceptable as evidence of compliance with UL requirements.

E. The contractor shall ensure that the fixture is UL listed for the ambient conditions where installed. Extra compensation will not be permitted for failure to coordinate fixtures with their ambient conditions.
   1. Fixtures located exterior to the building and/or in unconditioned damp spaces and under cover from direct weather exposure shall be UL listed as “Suitable for Damp Locations” unless noted otherwise.
   2. Fixtures located exterior to the building and/or in unconditioned wet spaces and in direct contact with the weather or in washdown areas shall be UL listed as “Suitable for Wet Locations” unless noted otherwise.

F. Fixtures installed with direct contact with insulation shall have an ‘IC’ rating for direct contact with insulation. Verify if fixtures will be in contact with insulation prior to installation. Notify Architect/Engineer of any conflicts.

G. Gasketing material shall be vinyl or other non-aging type material as approved by Engineer.

H. Verify ceiling system compatibility with recessed fixture mounting before placing order.

I. Provide proper trim for each fixture as required for various types of ceiling being installed throughout project; plaster rings, fixture ends or caps, suspension units, mounting brackets, and/or other auxiliary parts necessary to make a complete fixture.

J. Comply with additional fixture requirements contained in “Remarks” on “Lighting Fixture Schedule” and “Notes” on drawings.

K. Provide fixture stems as indicated on drawings.

L. Where stems are furnished by fixture manufacturer, verify length prior to releasing for shipment.

M. Where stems are furnished by Contractor, verify length prior to installation.

N. Suspended fixtures shall have swivel type aligner hangers in ceiling outlet boxes to ensure plumb suspension.

O. Exit fixtures shall be installed so that line of sight is not obstructed.

P. Provide recessed fixtures with thermal protectors.

2.3 FLUORESCENT FIXTURES

A. Fabricate of sheet steel, die-formed to provide structural strength.

B. Treat fixtures for acceptance of baked white high reflectance enamel or porcelain enamel finish coat.

C. Color shall be as indicated on Lighting Fixture Schedule or as selected by Architect.

D. Lens panels for surface box type fixtures and for recessed troffers shall be framed and be equipped with hinge and latch. Equip frames and louvers with retaining means to support frame during relamping.

E. Design fluorescent rapid start fixtures, 40W and smaller, to incorporate a grounded metal starting aid such as reflector, ballast channel strip, at least 1 inch wide over full length of lamp and within maximum ½ inch distance from lamp per ANSI C82.1.

F. Design fixtures such that case temperature of ballast does not exceed 90 degrees C.

2.4 BALLASTS

A. Acceptable Manufacturers:
1. Advance
2. Universal Lighting Technologies
3. Sylvania
4. Lutron

B. Fluorescent Ballast – Electronic Type:
1. Fluorescent lamp ballasts for T8 and biax lamps shall be high frequency electronic type, operating lamps at a frequency of 20 KHZ or higher with no detectable flicker.
2. Ballasts shall be instant start.
3. Ballasts manufacturers shall have been producing electronic ballasts in the U.S. for more than 10 years with a low failure rate.
4. Ballasts shall be approved and listed by Underwriters Laboratories, Inc.
5. Ballasts shall comply with all applicable state and federal efficiency standards.
6. Ballasts shall comply with FCC and NEMA limits governing electromagnetic and radio frequency interference and shall not interfere with operation of other normal electrical equipment.
7. Ballasts shall meet all applicable ANSI and IEEE standards regarding harmonic distortion and surge protection. Total harmonic distortion shall be less than 20% and input current third harmonic content shall not exceed 10%. Ballasts to be surge and transient protected to 600 volts.
8. Ballasts shall be a high frequency electronic type and operate lamps at a frequency above 42kHz to avoid interference with infrared devices.
9. Ballasts shall not be affected by lamp failure and shall yield normal lamp life.
10. Ballasts shall provide transient immunity as recommended by ANSI C62.41.
11. Ballasts shall operate lamps with no visible flicker (<3% flicker index).
12. Ballasts shall tolerate sustained open circuit and short circuit output conditions without damage.

13. Lamp current crest factor (ratio of peak to RMS current) shall not exceed 1.6 and ballast factor shall be not less than.87.
14. Ballasts shall operate at an input frequency of 60 HZ and an input voltage of 108 to 132 (120V models) or 249 to 305 (277V models).
15. Ballasts shall have power factor above 97%, sound rated “A” or better, and contain no PCB’s.
16. Ballasts shall operate as a parallel circuit to allow remaining lamp(s) to maintain full output if companion lamp(s) fail.
17. Ballasts shall be provided with integral leads, color-coded to ANSI standard C82.11.
18. Ballasts shall be capable of being tandem wired up to a maximum distance of 20 feet of lead length.
19. Ballasts shall provide for instant start of lamps at 0 degrees F where fixtures are located outside.
20. Use one lamp and two lamp ballasts where dual level switching is required. Refer to Fluorescent Fixture Wiring requirements in this specification section for limitations.
21. Ballast shall carry five-year warranty, including labor allowance.

C. Compact Fluorescent Ballast – Electronic Type:
1. Ballasts shall be meet requirements of paragraph B. above with the following exceptions noted below:
   a. Ballasts shall be programmed rapid start.
   b. Ballasts shall be multi-voltage and shall operate with an input source of 108 volts through 305 volts and sustained variations +/- 10% with no damage to the ballasts.
   c. Ballasts shall have a minimum ballast factor of.93 for 13 watt through 42 watt T4 and T5 compact fluorescent lamps.
   d. Input current Total Harmonic Distortion shall not exceed 10%.
   e. Ballasts shall have a power factor greater than.96.
   f. Ballasts shall incorporate lamp shutdown circuitry for end of lamp life protection.
   g. Ballasts shall allow for re-lamping without the need to cycle power.
   h. Ballasts shall be furnished with poke-in wire tap connectors or integral leads color-coded to ANSI C82.11 where applicable.

2.5 LENSES / LOUVERS / TRIM

A. Acceptable Manufacturers:
1. American Louver.
2. A.L.P. Lighting and Ceiling Systems.
3. Fixture Manufacturers’ Standard.

B. All lenses and louvers shall be positively held within the door frame so that the lenses/louvers will not fall out when hinged door is opened or fixture trim is removed.

C. Recessed fixtures with removable trim that serves as ceiling trim, provide trim that is positively held to the fixture body by adjustable means that permit the trim to be drawn up to the ceiling as tight as necessary to insure complete contact of trim with ceiling.

D. Plastic fixture lenses and diffusers, 100% clear virgin acrylic material. Lenses shall be minimum.125 overall thickness.

E. Where fixture glass lenses are specified, glass lenses shall be provided and plastic lenses shall not be substituted.

F. Provide clear tube guards over exposed fluorescent lamps in all strip and industrial fixtures in unfinished spaces. Equal to ALP Protect-A-Lamp.

2.6 LAMPS

A. Acceptable Manufacturers:
   1. G.E.
   2. Osram-Sylvania
   3. Philips Lighting Company
   4. Venture

B. General
   1. In areas where there is exposed food, clean equipment, utensils, and linens, or unwrapped single-service and single use articles, lamps shall be shielded, coated, or otherwise shatter-resistant.

C. Fluorescent Lamps:
   1. General
      a. All Fluorescent lamps shall be of the same manufacturer.
      b. Lamps in remodeled areas shall match color of existing lamps in area.
      c. Lamps shall conform to ANSI C78.
      d. Color – Kelvin temperature of lamps shall be (4100° K) or as noted on lighting fixture schedule.
      e. Minimum color rendering index (CRI) of 82.

   2. T8 Lamps
      a. Lamps shall be rated at 32 watts (48”), 25 watts (36”) nominal.
      b. Lamp shall have medium bi-pin base.
      c. Initial rated lumen output shall be minimum 2,850 lumens (48”), 2,225 lumens (36”).
      d. Rated lamp life shall be a minimum of 20,000 hours.
      e. Maximum length of 48”.

D. Compact Fluorescent
      a. Lamps shall be rated at 13, 18, 26, 32, 42 watts nominal as noted on fixture schedule.
      b. Lamp shall have base compatible with fixture socket.
      c. Rated lamp life shall be a minimum of 10,000 hours.

PART 3 EXECUTION

3.1 EXISTING WORK

A. Disconnect and remove abandoned luminaires, lamps, and accessories.

B. Extend existing interior luminaire installations using materials and methods as specified.

C. Clean and repair existing interior luminaires to remain or to be reinstalled.

3.2 INSPECTION

A. Examine areas and conditions under which lighting fixtures are to be installed and notify Engineer in writing of conditions detrimental to proper and timely completion of work.

B. Do not proceed with work until unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Architect's and/or interior designer's reflected ceiling plans show actual location of fixtures. Report to Architect/Engineer any conflict between these plans and electrical documents.

B. Architect's and/or interior designer's elevation and/or section plans may show actual location of fixtures that are not documented on the reflected ceiling plans. If fixtures are not shown on elevations and/or sections, install at height noted on the electrical documents. Report to Architect/Engineer any conflict between these plans and the electrical documents.

C. Verify adequacy of headroom and non-interference with other equipment such as ducts, pipes, and openings. Report to Architect/Engineer any conflict between these plans and electrical documents.

D. Install fixtures in mechanical and unfinished areas after ductwork and piping installation. Adjust fixture locations to provide the best lighting for equipment access and service locations. Locate fixtures 8'6" above floor, or at suitable locations within space or on walls but not lower than 7'-0".

E. Adjustable fixtures, track fixtures, floodlights and accent lights shall be aimed as directed by the Architect/Interior Designer/Engineer. Outdoor landscape and accent lighting shall be aimed in periods of darkness.

F. Install in accordance with manufacturer's written instructions and applicable requirements of NEC.

G. Provide proper bushings for wire entrances. Ground fixture chassis to conduit system.

H. Coordinate with trades so lighting fixtures are properly aligned with items such as diffusers, grilles, and speakers.

I. If necessary, relocate fixtures as directed so there will be no conflict with other equipment.

J. Align stem-mounted fixtures using swivel aligners and stem lengths as required. Verify stem lengths.

K. Make fixture holes for wire entrance with knock-out punches or hole saw, remove burrs. Do not cut holes with tinsnips.

L. Special care shall be taken to assure light-tight joints between recessed fixtures and ceiling.

M. Recessed lighting fixtures which are installed in a rough textured ceiling surface whereby light may be emitted between fixture frame and ceiling surface shall have black self adhesive polyfoam gasketing installed around inside edges of frame to prevent light leaks.

N. Install fixtures in a workmanlike manner. Care shall be taken in placement of fixture outlets and surface-mounted fixtures to maintain alignment, spacing, layout, and general arrangement shown on drawings. Contractor may vary these dimensions slightly in order to clear obstructions. Any major changes in the arrangement must be approved by Engineer.

O. Align and plumb rows of light fixtures.

P. Provide additional trim as required for neat plumbing of recessed fluorescent lights mounted in patterns.

Q. Maintain clearance as required in Section 410-66 of the NEC. Notify Engineer of any conflict, prior to roughing-in.

R. Comply with all relevant Federal, State, Local, and Agency guidelines when disposing of lighting waste. Most fluorescent and HID lamps require special handling and disposal procedures.

S. Install suspended luminaires using pendants supported from swivel hangers. Install pendant length required to suspend luminaire at indicated height.

T. Support luminaires larger than 2 x 4 foot (600 x 1200 mm) size independent of ceiling framing.

U. Install surface mounted luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.

V. Exposed Grid Ceilings: Support surface-mounted luminaires on grid ceiling directly from building structure.

W. Install recessed luminaires to permit removal from below.

X. Install recessed luminaires using accessories and firestopping materials to meet regulatory requirements for fire rating.

Y. Install clips to secure recessed grid-supported luminaires in place.

Z. Install wall-mounted luminaires at height as indicated on Drawings or as scheduled.

AA. Install accessories furnished with each luminaire.

BB. Connect luminaires to branch circuit outlets provided under Section 26 05 33 using flexible conduit.

CC. Make wiring connections to branch circuit using building wire with insulation suitable for temperature conditions within luminaire.

DD. Install specified lamps in each luminaire.

EE. Ground and bond interior luminaires in accordance with Section 26 05 26.

FF. All fixtures installed in tub/shower zone as defined by NEC shall be GFCI protected and wet location listed.

3.4 FIELD QUALITY CONTROL

A. See Division 1 - Quality Requirements and Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Operate each luminaire after installation and connection. Inspect for proper connection and operation. Correct malfunctioning units at site, and then restart to demonstrate compliance. Otherwise, remove and replace with new units and proceed with retesting.

3.5 ADJUSTING

A. See Division 1 - Execution and Closeout Requirements: Testing, adjusting, and balancing.

B. Aim and adjust luminaires to satisfaction of Engineer. Adjustable exterior fixtures shall be adjusted after dark.

3.6 CLEANING

A. See Division 1 - Execution and Closeout Requirements: Final cleaning.

B. Remove dirt and debris from enclosures.

C. Clean photometric control surfaces as recommended by manufacturer.

D. Clean finishes and touch up damage.

E. Remove conspicuous trade labels.

3.7 PROTECTION OF FINISHED WORK

A. See Division 1 - Execution and Closeout Requirements: Protecting finished work.

B. Relamp luminaires having failed lamps at Substantial Completion.

C. Protect installed fixtures from damage during remainder of construction period

END OF SECTION

SECTION 28 31 00

FIRE DETECTION AND ALARM

PART 1 GENERAL

1.1 SUMMARY

A. Section includes fire alarm control panels, manual fire alarm stations, automatic smoke and heat detectors, fire alarm signaling appliances, and auxiliary fire alarm equipment and power and signal wire and cable.

B. Related Sections:
1. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
2. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
3. Section 28 05 53 - Identification for Electronic Safety and Security.

1.2 REFERENCES

A. National Fire Protection Association:
1. NFPA 72 - National Fire Alarm Code.
2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.

1.3 SYSTEM DESCRIPTION

A. Fire Alarm System: NFPA 72, manual and automatic local fire alarm with connections to municipal system.

1.4 SUBMITTALS

A. Division 1 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate system wiring diagram showing each device and wiring connection; indicate annunciator layout, and design calculations.

C. Product Data: Submit catalog data showing electrical characteristics and connection requirements.

D. Test Reports: Indicate procedures and results for specified field testing and inspection.

E. Manufacturer's Field Reports: Indicate activities on site, adverse findings, and recommendations.

1.5 CLOSEOUT SUBMITTALS

A. Division 1 - Execution and Closeout Requirements: Closeout procedures.

B. Project Record Documents: Record actual locations of fire alarm equipment.

C. Operation and Maintenance Data: Submit manufacturer’s standard operating and maintenance instructions.

1.6 QUALITY ASSURANCE

A. Provide wiring materials located in plenums with peak optical density not greater than 0.5, average optical density not greater than 0.15, and flame spread not greater than 5 feet (1.5 m) when tested in accordance with NFPA 262.

B. Perform Work in accordance with State standard.

C. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience and with service facilities within 100 miles of project.

B. Installer: Certified fire alarm installer with service facilities within 100 miles of Project.

C. Design fire alarm under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Nevada.

1.8 MAINTENANCE SERVICE

A. Division 1 - Execution and Closeout Requirements: Maintenance service.

B. Furnish service and maintenance of fire alarm equipment for one year from Date of Substantial Completion.

PART 2 PRODUCTS

2.1 CEILING SMOKE DETECTOR

A. Manufacturers:
1. Silent Call Model 9120 FT with transmitter, 120V power with battery backup, 317 Mhz transmitter.
2. Silent Call Model 9120 F, 120V power with battery backup.
3. Substitutions: Not Permitted.

B. Product Description: NFPA 72, photoelectric type ceiling smoke detector with the following features:
1. Auxiliary relay contact.
2. Integral thermal element rated 135 degrees F (57 degrees C).
3. Visual indication of detector actuation.
4. Comply with UL 217, UL 1730.

C. Mounting: 4 inch (102 mm) outlet box.

2.2 CEILING CO DETECTOR

A. Manufacturers:
1. Silent Call.
2. Substitutions: Not Permitted.

B. Product Description: Carbon Monoxide Detector, 120V with 318 MHz transmitter.

C. Mounting: Surface mounted.

D. Provide 120V outlet or connection as required.

2.3 WIRE AND CABLE

A. Product Description: Non-power limited fire-protective signaling cable, copper conductor; 150 volt insulation rated 60 degrees C.

B. Cable Located Exposed in Plenums: Power limited fire-protective signaling cable classified for fire and smoke characteristics, copper conductor, 300 volts insulation rated 105 degrees C, suitable for use in air handling ducts, hollow spaces used as ducts, and plenums.

C. Fire alarm circuit conductors have insulation color or code as follows:
1. Power Branch Circuit Conductors: Black, red, white.
2. Initiating Device Circuit: Black, red.
3. Detector Power Supply: Violet, brown.
4. Signal Device Circuit: Blue (positive), white (negative).
5. Door Release: Gray, gray.
6. Municipal Trip Circuit: Orange, orange.
7. Municipal Fire Alarm Loop: Black, white.

PART 3 EXECUTION

3.1 EXAMINATION

A. Division 1 - Administrative Requirements: Coordination and project conditions.

B. Verify products and systems receiving devices are ready for installation.

3.2 EXISTING WORK

A. Remove exposed abandoned fire alarm wiring, including abandoned wiring above accessible ceiling finishes. Cut cable flush with walls and floors, and patch surfaces.

B. Disconnect and remove abandoned fire alarm equipment.

C. Maintain access to existing fire alarm equipment and other installations remaining active and requiring access. Modify installation or provide access panel.

D. Extend existing fire alarm installations using materials and methods compatible with existing installations.

E. Clean and repair existing fire alarm equipment to remain or to be reinstalled.

3.3 INSTALLATION

A. Install manual station with operating handle 4 feet 6 inches feet (1400 mm) above floor.

B. Install audible and visual signal devices 7 feet 6 inches feet (2300 mm) above floor.

C. Install 14 AWG minimum size conductors for fire alarm detection and signal circuit conductors in conduit.

D. Mount end-of-line device box with last device or separate box adjacent to last device in circuit.

E. Automatic Detector Installation: Conform to NFPA 72.

F. Ground and bond fire alarm equipment and circuits in accordance with Section 26 05 26.

G. Provide CO detector outside of bedroom areas. Provide 120V power via receptacle mounted at ceiling or hardwire.

3.4 FIELD QUALITY CONTROL

A. Division 1 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.

B. Test in accordance with NFPA 72 and local fire department requirements.

3.5 MANUFACTURER'S FIELD SERVICES

A. Division 1 - Quality Requirements: Manufacturer’s field services.

B. Include services of certified technician to supervise installation, adjustments, final connections, and system testing.

3.6 DEMONSTRATION AND TRAINING

A. Furnish 4 hours of instruction each for two persons, to be conducted at project site with manufacturer's representative.

END OF SECTION

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Remove surface debris.

B. Remove paving, curbs, and sidewalks and area lights.

C. Clear site of plant life and grass.

D. Remove trees and shrubs.

E. Remove root system of trees and shrubs.

F. Topsoil excavation.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

1.3 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works' standard.

B. Mixing Plant: Conform to Clark County Area Public Works' standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.5 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify that existing plant life designated to remain, is tagged or identified.

3.2 PROTECTION

A. Locate, identify, and protect utilities that remain, from damage.

B. Protect trees, plant growth, and features designated to remain as final landscaping.

C. Protect bench marks from damage or displacement.

3.3 CLEARING

A. Areas to be graded shall be cleared of all vegetation including subsurface roots, debris and trash. These materials shall be removed from the site by the Contractor. All existing uncontrolled fill and all soft, firm, loose or disturbed native soil shall be removed from areas to be graded and stockpiled for processing as structural fill or hauled off the site.

3.4 REMOVAL

A. Remove debris, rock, and extracted plant life from site.

3.5 TOPSOIL EXCAVATION

A. Prior to rough grading the areas of proposed structures and improvements shall be cleared of any surface obstructions, debris, organics (including vegetation), and from other deleterious materials. Materials generated from clearing operations shall be removed from the project site and disposed of at a legal landfill site.

END OF SECTION

SECTION 32 12 16

ASPHALTIC PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Asphaltic concrete paving.

B. Aggregate base course.

1.2 RELATED SECTIONS

A. Section 31 22 13 - Rough Grading: Preparation of site for base course.

B. Section 31 23 23 - Backfilling: Compacted fill under base course.

C. Section 32 11 23 - Aggregate Base Course: base course.

D. Division 01 - General Requirements

1.3 REFERENCES

A. MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot Mix Types - The Asphalt Institute (AI).

B. MS-8 - Asphalt Paving Manual - The Asphalt Institute (AI).

C. MS-19 - Basic Asphalt Emulsion Manual - The Asphalt Institute (AI).

D. ASTM D946 - Penetration-Graded Asphalt Cement for Use in Pavement Construction.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works' standard.

B. Mixing Plant: Conform to Clark County Area Public Works' standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.6 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when base surface temperature is less than 40 degrees, for surface is wet or frozen.

PART 2 PRODUCTS

2.1 MATERIALS

A. Asphalt Cement: Clark County Area Public Works' standards.

B. Aggregate for Binder Course Mix: Clark County Area Public Works' standards.

C. Aggregate for Wearing Course Mix: Clark County Area Public Works' standards.

D. Fine Aggregate: Clark County Area Public Works' standards.

E. Mineral Filler: Clark County Area Public Works' standards.

2.2 ACCESSORIES

A. Primer: In accordance with Clark County Area Public Works' standards.

B. Tack Coat: in accordance with Clark County Area Public Works' standards.

C. Seal Coat: In accordance with Clark County

2.3 ASPHALT PAVING MIX

A. Wearing Course: In accordance with Clark County Area Public Works' standards.

2.4 SOURCE QUALITY CONTROL

A. Provide mix design for asphalt.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that compacted granular base is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.2 SUBBASE

A. Section 32 11 23 - Aggregate Base Course forms the base construction for work of this Section.

3.3 PREPARATION - PRIMER

A. Apply primer in accordance with Clark County Area Public Works' standards.

B. Apply primer existing aggregate base.

C. Use clean sand to blot excess primer.

3.4 PREPARATION - TACK COAT

A. Apply tack coat in accordance with Clark County Area Public Works' standards.

B. Apply tack coat to contact surfaces of curbs, gutters, sidewalks and asphaltic concrete.

C. Coat surfaces of manhole, catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

3.5 PLACING ASPHALT PAVEMENT - SINGLE COURSE

A. Install Work in accordance with Clark County Area Public Works' standards.

B. Place asphalt within 24 hours of applying primer or tack coat.

C. Place to thickness identified in plans.

D. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

E. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.6 PLACING ASPHALT PAVEMENT - DOUBLE COURSE

A. Place asphalt binder course within 24 hours of applying primer or tack coat.

B. Place wearing course within two hours of placing and compacting binder course.

C. Place wearing course to thickness identified in schedule at end of Section.

D. Compact pavement by rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

E. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.7 SEAL COAT

A. Apply seal coat to surface course in accordance with Clark County Area Public Works' standards.

3.8 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from True Elevation: Within 1/2 inch.

3.9 FIELD QUALITY CONTROL

A. Field testing will be performed under provisions of Section 01 33 00.

B. Take samples and perform tests in accordance with Section 01 33 00.

3.10 PROTECTION

A. Immediately after placement, protect pavement from mechanical injury for one day.

END OF SECTION

SECTION 31 22 13

ROUGH GRADING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal of topsoil and subsoil.

B. Cutting, grading, filling and rough contouring the site.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 31 11 00 - Site Clearing.

C. Section 31 23 16.26 - Rock Removal.

D. Section 31 23 16 - Excavation: Building excavation.

E. Section 31 23 23 - Backfilling: General building area backfilling.

F. Section 31 23 16.13 - Trenching: Trenching and backfilling for utilities.

G. Section 31 22 19 - Landscape Grading: Finish grading with topsoil to contours.

1.3 REFERENCES

A. ANSI/ASTM D1557 - Test Methods for Moisture - Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18-inch Drop.

B. All earth work and site preparation shall be performed in accordance with the requirements and specifications presented in the “Uniform Standard Specifications for Public Works Construction, Off-Site Improvements, Clark County area, Nevada,” latest edition unless noted otherwise.

C. The Geotechnical Evaluation Miller Plaza Residential Development located at 3900 Perry Street, Clark County, Nevada (Project No. 302978001, December 2, 2009) by Ninyo & Moore, Geotechnical and Environmental Science Consultants.

1.4 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works’ standard.

B. Mixing Plant: Conform to Clark County Area Public Works’ standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.6 ACCEPTABLE MANUFACTURERS

C. Approved Equal.

1.8 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 01 33 00.

B. Accurately record actual locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.1 MATERIALS

A. Topsoil: Excavated material, graded, free of roots, rocks larger than 1-inch, subsoil, debris, and large weeds.

B. Subsoil: Excavated material, graded, free of lumps larger than 4-inches, rocks larger than 4-inches, and debris.

C. Uncontrolled Fill: The term uncontrolled fill refers to man-made fill that was placed without observation, testing or documentation.

D. Structural Fill and Backfill:

1. Excavated site soils may be used as structural fill in areas underlying slabs, pavements, foundations and other improvements, provided that the excavated soils have a very low to low expansion potential (Expansion Index, EI, less than 50, as evaluated by ASTM D 4829), are processed to remove materials larger than 4 inches in nominal dimensions and all organic and other deleterious materials. Oversized material shall be broken down or crushed to an acceptable size, selectively hauled off the site, or placed in deep fill areas outside of improvement areas at a depth of at least 5 feet below finished grade.

2. All imported materials used for structural fill shall satisfy the following recommendations. Samples of all materials proposed for use as structural fill shall be submitted to the Geotechnical Engineer for testing and evaluation prior to being transported to the site.
    A. All imported fill material shall be similar to the on-site soils with less than 20% passing the No. 200 sieve and 100% passing the 4 inch sieve.
    B. Imported fill materials shall have a very low to low expansion potential (Expansion Index, EI, less than 50, as evaluated by ASTM D 4829).
    C. Imported fill materials and site structural fill shall have a low solubility potential of 1.5 percent or less, as evaluated by Technical Guideline TG-19-2007.
    D. Imported fill materials shall be free of debris, organic materials and other deleterious material

E. Retaining Wall Backfill: Structural fill and backfill which has been processed to meet the criteria presented in Section 31 22 13-Rough Grading, Subsection 2.1-Materials, Item D-Structural Fill and Backfill, shall be used as backfill behind all retaining walls.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify site conditions under provisions of Section 01 31 13.

B. Verify that survey benchmark and intended elevations for the Work are as indicated.

3.2 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Identify known underground, above ground, and aerial utilities. Stake and flag locations.

C. Notify utility companies to remove and relocate utilities as required.

D. Protect above and below grade utilities, which are to remain.

E. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.

3.3 TOPSOIL EXCAVATION

A. Excavate topsoil from marked areas.

B. Do not excavate wet topsoil. Remove from site.

3.4 SUBSOIL EXCAVATION

A. Excavate subsoil from areas to be further excavated, re-landscaped, or re-graded.

B. Do not excavate wet subsoil.

C. Stockpile subsoil. Cover to protect from erosion.

3.5 OVEREXCAVATION

A. The on-site soils are unsuitable in their present condition for the support of foundation elements, exterior concrete flatwork and non-dedicated asphalt pavements. For footings supporting buildings, block walls or retaining walls, the on-site soils should be overexcavated to a depth of at least 18 inches below the bottom of the footing. For interior slabs-on-grade, the on-site soils should be overexcavated to a depth of at least 18 inches below the bottom of the supportive aggregate base course. For buildings, the recommended overexcavation shall extend laterally a minimum of 5 feet beyond the perimeter of the building. For block walls or retaining walls, the recommended overexcavation shall extend laterally a minimum of 2 feet beyond the footing edges. The recommended overexcavation depths are summarized in the following table:

**Table – Summary of Recommended Overexcavation Depths**.

| PROPOSED IMPROVEMENT | RECOMMENDED OVEREXCAVATION DEPTH |
|---|---|
| Building Foundations | 24 inches below existing grade or 18 inches below foundation bottom elevations, whichever extends lower in elevation. |
| Concrete Slab-on-Grade Floors | 24 inches below existing grade or 18 inches below supportive gravel (Type II Aggregate Base), whichever extends lower in elevation. |
| Screen/Retaining Wall Foundations | 24 inches below existing grade or 18 inches below foundation bottom elevations, whichever extends lower in elevation. |
| Exterior Concrete Flatwork and Paved Parking and Access Drive Areas | 18 inches below existing grade or 12 inches below supportive gravel (Type II Aggregate Base), whichever extends lower in elevation. |
| ***Overexcavation depth may include approximately 6 inches of scarified, moisture-conditioned, and compacted subsurface soils. Existing fill and any loose, soft, and/or disturbed native soils shall be removed from proposed structures and improved areas.** | |

The vertical and lateral extent of the recommended overexcavations shall be verified under the direction of the geotechnical engineer.

3.6 FILLING

A. Excavated on-site soils may be used as structural fill after reprocessing in areas underlying slabs, pavements, foundations or other improvements, provided that the excavated soils have a very low to low expansion potential (Expansion Index, EI, less than 50, as evaluated by ASTM D 4829),, are processed to remove materials larger than 4 inches in nominal dimensions and all organic and other deleterious materials. Oversized material shall be broken down or crushed to an acceptable size, selectively hauled off the site, or placed in deep fill areas outside of the building pad areas at a depth of at least 5 feet below finished grade. On-site stockpiled fill materials shall be evaluated for suitability as structural fill under imported fill specifications prior to their placement in improvement areas.

B. All imported materials used for structural fill shall satisfy the following recommendations. Samples of all materials proposed for use as structural fill shall be submitted to the Geotechnical Engineer for testing and evaluation prior to being transported to the site.

1. Imported fill materials shall be similar to the on-site soils with less than 20% passing the No. 200 sieve and 100% passing the 4 inch sieve.
2. Imported fill materials shall have a very low to low expansion potential (Expansion Index, EI, less than 50, as evaluated by ASTM D 4829).
3. Imported fill materials and site structural fill shall have a low solubility potential of 1.5 percent or less, as evaluated by Technical Guideline TG-19-2007.

C. Structural fill shall be placed in loose lifts up to 8 inches thick, uniformly moisture conditioned to 2% below the optimum moisture content or greater, and compacted to at least 95% of the maximum dry density as determined by ASTM D 1557.

D. Oversized materials greater than 4 inches in nominal dimension including oversized material generated by the excavation of cemented soil if encountered during construction, shall be selectively hauled off the site or crushed to an acceptable size.

E. On-site stockpiled fill soils may be suitable for structural fill if processed as described in paragraph A above. Samples of stockpiled on-site soil proposed for use as structural fill shall be submitted to the soils engineer for testing and evaluation prior to incorporation into fill placement.

F. Backfill placed against footings shall be moisture conditioned and compacted as recommended for structural fill.

G. Excavations greater than 4 feet in depth into the on-site, uncemented soils are not expected to stand vertically. Excavations greater than 4 feet in depth shall be sloped or shored as deemed necessary by the contractor in accordance with applicable federal and state standards. Safety of construction personnel is the responsibility of the contractor.

3.7 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 1/10 foot.

3.8 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Section 01 45 00.

B. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D1557 and with Section 01 45 00.

C. Compaction testing will be performed in accordance with ANSI/ASTM D1557 and with Division 01 - General Requirements.

D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

END OF SECTION

SECTION 31 23 16.26

ROCK REMOVAL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal of discovered rock during excavation.

B. Expansive tools to assist rock removal.

1.2 RELATED SECTIONS

A. Division 01 - General Reqirements.

B. Section 31 22 13 - Rough Grading.

C. Section 31 23 16 - Excavation: Building excavation.

D. Section 31 23 23 - Backfilling: Backfill materials.

E. Section 31 23 16.13 - Trenching: Trenching and backfilling for utilities.

1.3 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works' standard.

B. Mixing Plant: Conform to Clark County Area Public Works' standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.5 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

1.6 DEFINITIONS and SITE CONDITIONS

A. Site Rock: Solid mineral material with a volume in excess of 1/3 cubic yard or solid material that cannot be removed with a 3/4 cubic yard capacity power shovel without drilling or blasting.

B. Per the Geotechnical Investigation for this site, "hard to very hard, weakly to moderately cemented sand and gravel was encountered in numerous borings at depth between 5 and 8 feet below the existing ground surface." The Geotechnical Investigation also states that although strongly cemented soils were not encountered in the borings, these difficult to excavate soils could be encountered at locations beyond or between the boring locations.

C. The Contractor shall review the Grading Plans and Earthwork Cut and Fill calculations and drawings prepared for this project. It is the Contractors responsibility to remove all weakly to strongly cemented, hard to difficult to excavate soils encountered during the excavation and overexcavation for this project.

1.7 ROCK REMOVAL - MECHANICAL METHOD

A. In general, heavy-duty backhoe, ripper, hoe-ram, headache ball, rock saw or similar rock excavation techniques should be used to excavate the weakly to moderately cemented soils expected to be encountered on this project.

B. Excavate and remove rock by the mechanical method. Drill holes and utilize expansive tools or wedges to fracture rock.

C. Cut away rock at bottom of excavation to form level bearing.

D. Remove shaled layers to provide sound and un-shattered base for footings and/or foundations.

E. In utility trenches, excavate to 6-inches below invert elevation of pipe and 24-inches wider than pipe diameter.

F. Remove excavated materials from site and reuse for site landscaping.

G. Correct unauthorized rock removal in accordance with backfilling and compaction requirements of Section 31 23 23.

END OF SECTION

SECTION 31 23 16

EXCAVATION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavating for building foundations.

B. Excavating for slabs-on-Grade, paving and landscaping.

C. Excavating for site structures.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 31 22 13 - Rough Grading: Topsoil and subsoil removal from site surface.

C. Section 31 23 16.26 - Rock Removal.

D. Section 31 23 23 - Backfilling.

E. Section 31 23 16.13 - Trenching: Excavating for utility trenches.

F. Section 33 10 00 - Site Water Lines.

G. Section 33 40 00 - Site Storm Drainage Systems.

H. Section 33 30 00 - Site Sanitary Sewerage System.

1.3 SUBMITTALS

A. Submit under provisions of Sections 01 33 00 and 01 34 00

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works' standard.

B. Mixing Plant: Conform to Clark County Area Public Works' standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.5 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

1.6 FIELD MEASUREMENTS

A. Verify that survey benchmark and intended elevations for the work are as indicated.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 PREPARATION

A. Identify required lines, levels, contours, and datum locations.

B. Locate, identify, and protect utilities that remain from damage.

C. Notify utility companies to locate utilities.

D. Protect plant life, lawn and other features remaining as a portion of final landscaping.

E. Protect benchmarks, survey control points, existing structures, fences, sidewalks, paving and curbs from excavating equipment and vehicular traffic.

3.2 EXCAVATING

A. Underpin adjacent structures, which may be damaged by excavating work.

B. Excavate subsoil to accommodate building foundations, slabs-on-grade, paving, site structures, construction operations and grading.

C. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 31 23 23 and 31 23 16.13.

D. Slope banks with machine to angle of repose or less until shored.

E. Do not interfere with 45-degree bearing splay of foundations.

F. Grade top perimeter of excavating to prevent surface water draining into excavation.

G. Hand trim excavation. Remove loose matter.

H. Remove lumped subsoil, boulders and rock.

I. Notify Soils Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

J. Correct areas over excavated in accordance with Section 31 23 23.

K. Stockpile excavated material in area designated on site.

3.3 OVER-EXCAVATION

A. Over excavation shall be performed in accordance with Section 31 22 13 - Rough Grading, Subsection3.5- Over-Excavation.

B. Backfilling shall be performed in accordance with Section 31 22 13 - Rough Grading, Subsection 3.6-Filling.

3.4 FIELD QUALITY CONTROL

A. Division 01 - General Requirements,.

B. Provide for visual inspection of bearing surfaces.

3.5 PROTECTION

A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

SECTION 31 23 23

FILL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Building perimeter backfilling to subgrade elevations.

B. Site filling and backfilling.

C. Fill under slabs-on-grade, paving and landscaping.

D. Consolidation and compaction as scheduled.

1.2 RELATED SECTIONS

A. Division 01 - General Requirements.

B. Section 31 23 16 - Excavating.

C. Section 31 23 16.13 - Trenching: Backfilling of utility trenches.

D. Section 32 11 23 - Aggregate Base Course.

E. Section 32 13 13 - Portland Cement Concrete: Concrete materials.

F. Section 33 10 00 - Site Water Lines.

G. Section 33 30 00 - Site Sanitary Sewerage System.

1.3 SUBMITTALS

A. Submit under provisions of Section 01 33 00 and 01 34 00.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works' standard.

B. Mixing Plant: Conform to Clark County Area Public Works' standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.5 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

1.6 REFERENCES

A. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb (4.54 kg) Rammer and an 18in. (457 mm) Drop.

B. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.

C. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10lb (4.54Kg) Rammer and 18 in. (457mm) Drop.

D. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.

E. ASTM D3017 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

F. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

## PART 2 PRODUCTS

### 2.1 EXAMINATION

A. Verify subdrainage, dampproofing, or waterproofing installation has been inspected.

B. Verify underground tanks are anchored to their own foundations to avoid floatation after backfilling.

C. Verify structural ability of unsupported walls to support imposed loads by the fill.

### 2.2 PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Excavation and Over Excavation of uncontrolled fill and unsuitable subgrade materials shall be in accordance with Section 31 22 13-Rough Grading, Subsection 3.5-Overexcavation.

C. Backfilling of over-excavated materials shall be in accordance with Section 31 22 13-Rough Grading, Subsection 3.6 Filling.

### 2.3 BACKFILLING

A. Backfill areas to contours and elevations as shown on plans.

B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

C. Employ a placement method that does not disturb or damage other work.

D. Maintain optimum moisture content of backfill materials to attain required compaction density.

E. Do not backfill against unsupported foundation walls.

F. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.

G. Slope grade away from building minimum of 1/4 inch per foot, unless noted otherwise.

H. Make gradual grade changes. Blend slope into level areas.

I. Remove surplus backfill materials from site.

J. Leave fill material stockpile area free of excess fill materials.

K. Fill against foundations, grade beams and retaining walls shall be properly placed and compacted. Backfill shall be mechanically compacted in layers (6 to 8 inches maximum thickness); flooding shall not be permitted. Backfill within 2 feet of the back of retaining walls shall be compacted to at least 95 percent of the maximum dry density obtainable by the ASTM D1557 method. Care shall be taken when placing backfill so as not to damage the walls. Compaction of each lift adjacent to walls shall be accomplished with hand-operated tampers or other lightweight compactors. Over compaction may cause excessive lateral earth pressures, which could result in wall movements.

2.4 FILL MATERIALS

A. Acceptable backfill materials shall be in accordance with Section 31 22 13-Rough Grading, Subsection 3.6-Filling.

B. All imported materials shall be approved by the Soils Engineer providing testing during construction prior to importing.

C. Structural fill materials shall be in accordance with Section 31 22 13-Rough Grading, Subsection 2.1-Materials, item D-Structural Fill and Backfilling.

D. Structural fill materials shall be used as backfill within 2 feet of the back retaining walls. The structural fill shall be in accordance with section 31 22 13-Rough Grading, Subsection 2.1-Materials, Item D-Structural Fill and Backfill.

2.5 TOLERANCES

A. Top Surface of backfilling: Plus or minus 1 inch from required elevations.

2.6 FILL PLACEMENT AND COMPACTION

A. After the recommended over-excavations have been performed, areas to receive structural fill shall be scarified to a minimum depth of 8 inches, uniformly moisture conditioned to 2% below the optimum moisture content or greater, and compacted to at least 95% of the minimum dry density as determined by ASTM D 1557.

B. Placement: All fill materials shall be placed in layers 8 inches or less in loose thickness, uniformly moisture conditioned to 2% below the optimum moisture content or greater, and compacted to at least 95% of the maximum dry density as determined by ASTM D 1557. Fill placed on slopes of 5 horizontal to 1 vertical or steeper shall be benched into competent native soil by a series of benches. Benching can be performed simultaneously with placement of fill. The method and extent of benching should be observed and evaluated by the Geotechnical Engineer.

C. Material Volume Changes: There will be a reduction of volume when the on-site soils are compacted. Shrinkage of the on-site soils is estimated to be in the range of 10 to 15% when compacted to at least 95% of the maximum dry density (ASTM D 1557).

2.7 FIELD QUALITY CONTROL

A. Section 01 45 00 - Quality Assurance: field inspection and testing.

B. Compaction testing will be performed in accordance with project Geotechnical Report.

C. If testing indicates work does not meet specified requirements, remove work, replace and retest.

D. Frequency of Tests: Per Owners requirements.

E. Proof roll compacted fill surfaces under on-grade pavers and paving.

2.8 PROTECTION OF FINISHED WORK

A. Protect finished work.

B. Reshape and re-compact fills subjected to vehicular traffic.

2.9 SCHEDULE

A. Exterior Side of Foundation Walls:

Foundation soils shall not be allowed to become saturated during or after construction. Infiltration of water into foundation or utility excavations shall be prevented during construction. Utility lines shall be properly installed and the backfill properly compacted to avoid possible sources for subsurface saturation.

Positive drainage away from the structures shall be provided during construction and maintained throughout the life of the structures. Any downspouts, roof drains or scuppers shall discharge into splash blocks or extension and away from the structures. Backfill against footings, exterior walls and in utility trenches shall be properly compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Performance of the foundation system is dependent on the ability to keep moisture from penetrating the native soils below foundations. The following recommendations shall be implemented:

1. Any planter areas adjacent to the structures shall be sealed.
2. Positive drainage (2% minimum) shall be maintained away from the structures, adjoining concrete slabs and block walls for a distance of at least 5 feet.
3. No landscaping or sprinklers shall be allowed within 5 feet of the structures or block walls.
4. Watering shall be kept to a minimum.

B. Fill Under Asphalt and Concrete:

1. Compact subsoil to 95 percent of its maximum dry density.
2. The pavement area subgrade shall be properly prepared before placing any asphalt or base materials. The following minimum pavement sections are recommended for on-site paved areas.
    a. Automobile Parking
        1) 2-1/2 inch Asphalt.
        2) 4-inch Type II Base Course
    b. Main Corridors with Light Truck Traffic
        1) 3-1/2 inch Asphalt
        2) 7-inch Type II Base Course
    c. On-Site Concrete Flatwork
        1) 6-inch Concrete Slab with #4 Rebar @ 24” O.C. Each Way
        2) 6-inch Recycled Type II Base Course

PART 3 EXECUTION

Not used.

END OF SECTION

**SECTION 32 01 90**

**LANDSCAPE MAINTENANCE**

PART 1 GENERAL

1.1 SUMMARY

A. Includes But Not Limited To:
1. Provide maintenance for new landscaping as described in Contract Documents.

1.2 RELATED SECTIONS

A. Section 32 84 00 – Landscape Irrigation

B. Section 32 92 23 – Sodding

C. Section 32 93 00 – Landscape Plants

1.3 DEFINITIONS

A. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1 and *Hortus Third*.

B. Tree: Plant denoted on the plant schedule as 'tree' or 'palm'. See to planting plan.

C. Shrub: Plant denoted on the plant schedule as 'shrub', 'groundcover', 'accent' or 'cactus'. See planting plan.

D. Landscape areas: All areas scheduled for turf, tree and shrub planting.

E. Planters: All landscape areas not scheduled for turf.

F. Building envelope: Area within the boundary constituted by the outermost corners of all buildings. Including, but not limited to areas between buildings.

G. Planters at grade: Planters that reside at or within 2-inches of the adjacent walks, curbs, finish floor, or finish grade elevations.

H. Raised planters: Planters that retain soil in excess of 2-inches of soil.

1.4 QUALITY ASSURANCE

A. Subcontractor license requirements are as noted in Section 32 93 00, 1.7 Quality Assurance, under Installer.

1.5 SUBMITTALS

A. Submit all MSDS sheets for fertilizers, herbicides, pesticides, pre-emergent & post-emergent products that are used for this project.

B. Submit form M-1, Maintenance Reports, each week of the maintenance period. Reports are to be submitted each Monday morning for the past week of maintenance.

C. Submit form M-2 each time fertilizers, pre-emergent's, pest control and other products requested by the owner's representative are applied. Attach copies of receipts noting product type, quantity, and date of purchase for all product applications.

D. Submit form M-3 a minimum of every 60 days during the maintenance period. Provide completed form prior to the end of maintenance.

E. Submit all “Right to Know” forms (14) days before the application of pesticides, herbicides, fertilizer, and etc.

1.6 REGULATORY REQUIREMENTS

A. Comply with regulatory requirements for fertilizer and herbicide composition.

B. The types of herbicides to be used and the methods of application shall confirm with the Environmental Protection Agency Policies.

PART 2 PRODUCTS

2.1 MANUFACTURES

A. Tree and shrub fertilizers
   1. Gro-Power liquid NPK 4-8-2,
   2. Gro-power plus w/M

B. Turf Fertilizers
   1. Fescue and Bermuda Grass
      a. NPK 22-3-9 Ammonia Phosphate-Sulfate, Nitra King or equal.
      b. NPK 15-15-15 Triple pro or equal.
      c. NPK 15-15-15, slow release, Endure or equal.
      d. NPK 16-6-8, Turf Supreme or equal.
      e. Iron shall be granular form. Gro-power premium green or equal.
      f. NPK 21-0-0 Ammonium Sulfate. Best or equal.

C. Insecticides, application rates as per manufacture recommendations.
   1. Sevin
   2. Diazinon
   3. Cygon
   4. Orthene
   5. Measural
   6. Malathion
   7. Mavrik
   8. Tempo

D. Fungicides, application rates as per manufacture recommendations.
   1. Subdue
   2. Bayleton
   3. Funginex

E. Pre-Emergent (herbicide product), application rate (5) five pounds per 1000 SF.
   1. Pre-Emergent, Snapshot
   2. Pre-Emergent, XL 2 G

F. Post-Emergent products. Application rates as per manufacture recommendations.
   1. Post-Emergent, Round Up
   2. Post-Emergent, Fusilade
   3. Post-Emergent, Poast
   4. Post-Emergent, Diquat

PART 3 EXECUTION

3.1 PERFORMANCE

A. General
   1. Maintain irrigation and landscaping from the date identified in the Certificate of Substantial Completion for landscape areas through the 120-day maintenance period.
   2. Minimum maintenance frequency:
      a. For the first 14-days of maintenance, provide at least one caretaker on site (7) seven days a week.
      b. The third and fourth week, provide at least one caretaker on site three (3) days a week.
   3. For the remaining 92-days of maintenance provide at least one caretaker on site for a minimum of two days a week. Coordinate on site visits so as not to conflict with apartment activities. If the maintenance period is extended, provide at least one caretaker on site for at least two days per week until the owner's representative issues the end of maintenance in writing.
   4. Maintenance personnel are to sign in at the Jones Gardens Office for each maintenance visit. Coordinate all maintenance visits with the Jones Gardens Office during business hours.
   5. Maintenance reports are to be submitted each week. If the reports are not submitted within (3) working days after the maintenance work is completed payment will not be made for that week. In addition to this the work will not be counted towards the 120-day maintenance period. Additional maintenance will be required for each week that reports are not submitted.
   6. The Contractor is required to continue all maintenance until the Owner's Representative has submitted the final acceptance letter.

B. Warranty for all products and materials shall extend through the end of the maintenance period. Exception: Items that are specified to have a warranty extending beyond the end of the maintenance period.

3.2 GENERAL MAINTENANCE

A. Fertilization
   1. Professionally trained operators shall perform all chemical applications.
   2. All product label directions must be read and strictly followed. All state and local posting regulations shall be followed. All safety precautions shall be observed and safety devices, equipment and protective clothing shall be used.
   3. See that no damage occurs to any plant material from the use of any fertilizer or other chemical. Repair any damage that is a result of mishandling or misuse of materials.
   4. Weather shall be monitored by the contractor and applications made under proper weather conditions. No spraying shall be done when wind is greater than 5 miles per hour.
   5. Only equipment made specifically for fertilizer or chemical application shall be used. All chemical application equipment will be properly calibrated and maintained prior to use.
   6. Labels (MSDS Sheets) shall be available for all fertilizers and chemicals upon request.

B. Weed Control
   1. Weeds shall be removed on a regular and continuing basis, either manually or chemically, weeding shall take place no less than once each month. Bermuda grass and other noxious weeds shall not be allowed to establish themselves in ground cover areas and will require chemical eradication.
   2. Apply post-emergent herbicides to control all weed growth, at a minimum, on a monthly basis. If the maintenance period goes through the winter dormant season continue applications to guarantee that all weeds will be terminated for up coming spring and summer months.
   3. A minimum of two applications of pre-emergent during a typical 120-day maintenance period. If the maintenance goes beyond 120-days additional pre-emergent applications will be required every 60 days. A final pre-emergent application shall be made 7-days prior to the end of the maintenance period.
      a. Application rate for pre-emergent, (5) five pounds per 1000 SF.
      b. All pre-emergent applications are to be water activated within 2 hours after it has been installed.
   4. Broad leaf weeds, crabgrass, Bermuda grass and other noxious weeds shall not be allowed to establish themselves in landscape areas. Invasive grasses and other weeds shall also be removed. Noxious weeds are that produce noxious seed, i.e., mustard, tumbleweed, burr clover, wild tobacco, thistle, Bermuda grasses.

C. Rock Mulch Areas: Replace rock mulch that is removed to maintain depths noted on the drawings and section 32 93 00 Landscape plants.

D. Pest and Disease Control
1. The Contractor shall be responsible to regularly inspecting all plants material and turf for past or present disease infestation. When pests or disease are found, promptly apply all necessary insecticides, fungicides, bactericides, poison baits, or other safe, commonly approved extermination methods.
2. Only a trained commercial pest control operator shall apply pesticides. Provide all necessary licensing and equipment. Pesticide application will be made only as recommended by competent, responsible persons. No restricted pesticides shall be used without consent from proper authorities.
3. Labels (MSDS Sheets) shall be made available for all chemicals upon request.
4. Submit "Right to Know" forms (14) days prior to application.

E. Clean Up
a. All landscape areas shall be inspected regularly, and all debris, leaves, branches, paper, and trash shall be removed and disposed of promptly.
b. Spent flowers, leaves and debris shall be removed from plant areas every week.
c. Contractor shall repair any and all eroded areas by in filling with topsoil and/or crushed rock to restore the area to the condition proposed in the drawings and specifications. Factors that cause the erosion shall be reported immediately to the Architect and Owner's Representative.

3.3 Tree and Plant Care

A. General Care
1. Maintaining all plants in a vigorous, thriving condition by irrigating appropriately, pruning, weeding, cultivating, spraying, and any other necessary operations.
2. All trees are to be maintained in a shape as close to their natural form as possible.
3. Chemical applications in addition to those specified to be applied as needed in maintaining the landscape areas.
4. The contractor shall inspect all planting and areas at least twice per week during the maintenance period.

B. Shrub and Tree Removal / Replacement
1. Plants that are removed are to be replaced with equal size and type unless noted in writing from the architect.
2. Replace plant if over 1/4 of original foliage is dead or removed.
3. Replace dead or dying material not in a vigorous, thriving condition as soon as weather permits and on notification by Owner's Representative. Replacement shall occur within a maximum of 7-days.
4. Replace plants, which in the opinion of the Owner's Representative have been damaged or neglected thereby impacting the plants shape, size, and uniformity.
5. Newly planted trees to be tagged with a waterproof tag with new maintenance date (date of new installation.)
6. All replacement plants must be inspected and approved by the Architect & Owner's Representative prior to installation.

C. Tree Pruning
1. Prune existing tree branches that interfere with pedestrian access.
2. Prune removing dead or damaged portions of the tree.
3. All pruning shall be performed by a certified arborist, submit certifications prior to tree pruning.

D. Tree Trimming
1. Trees are to be pruned and trimmed in accordance with accepted industry standards.
2. Palm species shall be pruned to keep them free of dead or diseased growth and to ensure pedestrian safety.
3. Pine trees shall be pruned up to two feet above finish grade.
4. Tree pruning, the removal of large limbs and branches that impact the plant stability and pedestrian access.
5. A certified arborist shall perform trimming.

E. Edging at Tree Base
1. Areas around the bases of trees will be kept clean. Grass and ground covers shall be neatly trimmed and tree's root sprouts or suckers removed.

F. Tree Staking and Guying is to be checked weekly with repairs
   1. The contractor is responsible for checking ties and guys regularly so as to avoid chafing and girdling of a tree.

G. Tree and Plant Watering
   1. Trees not efficiently watered with existing water system shall be watered from hose bibs or recommendations will be made for a specific irrigation improvement.
   2. Apply water in conformance with seasonal conditions and water conversation measures to keep appropriate moisture levels in plant root zones at all times while avoiding over watering. Periodic soil probing shall be made to verify watering requirements.

H. Tree and Shrub Fertilization
   1. Gro-power plus w/M: A soil probe shall be used to make evenly spaced holes 6-inches deep and a maximum of two feet apart along the drip line of the foliage. A minimum of (3) holes shall be provided for shrubs, and (8) holes for trees. Increase the number of holes as necessary to provide a maximum of two feet between holes. Each hole shall be evenly charged with the proper fertilizer.
      a. Frequency: every 120 days during the maintenance period. (one application during a typical 120-day maintenance period.)
      b. Ratio:
         1) Shubs ¼ cup per shrub.
         2) Trees 36" box and smaller, 2 cups per tree.
         3) Trees larger than 36" box, 4 cups per tree.
   2. Gro-power 4-8-2 liquid fertilizer:
      a. Frequency: every 60 days during the maintenance period. (two applications during a typical 120-day maintenance period.)
      b. Ratio: (2) tablespoons per gallon of water shall provide 20 square feet of coverage.
      c. Location: Soil surface directly above root zones of all trees and shrubs.
   3. No fertilization to be conducted during dormancy periods, prior to leaf drop (November 1 through March 1). If the required fertilizing cannot take place due to the winter season, provide the required applications between March 1 and March 10. Resume applications at specified increments thereafter.

3.4 Turf Areas

A. General Turf
   1. Mow grass once each week or more as directed by the owner's representative.
      a. Maintain fescue, rye, and blended species at a maximum of 2 ½-inches mowing height.
      b. Neatly trim edges and hand clip where necessary.
      c. Immediately remove clippings after mowing and trimming. Cuttings and clippings shall not be left overnight at the project site.
      d. All mowing, edging, and clean up work in any specific area shall be accomplished in a timely manner.
   2. Damaged grass shall be repaired immediately with matching sod type. Minimum grass replacement size is 24 square inches. Areas requiring replacement during dormancy shall be replaced after dormancy.
   3. All mowing machinery shall be maintained with sharp cutting blades and shall be equipped with appropriate attachment to collect clippings while mowing. If air blowers are utilized for clean up operations. The blowers must be of a type that emit low noise, and proper consideration must be given in terms of their use adjacent to the residential units.

B. Water Requirements
   1. Apply water in conformance with turf types, seasonal conditions and water conservation measures to keep appropriate moisture levels in turf root zones at all times while avoiding over watering.
   2. A soil probe shall be used to consistently monitor moisture levels in the root zone.

C. Mowing
   1. The mowing height for Fescue turf and turf blends shall be 2 to 2.5 inches.
   2. The mowing heights for Bermuda turf shall be 3/4 inch to 1 inch.
   3. Directions of mowing operation to alternate periodically to avoid soil compaction, improve aeration, prevent thatch build up and improve general appearance.

D. Edging
1. All sidewalks, curbing, light standards, valve boxes or other solid areas in turf, shall be edged in conjunction with the weekly mowing operation.
2. This shall be done at least once each month but more often if growth so dictates. All trimming around trees shall be done in such a way as not to damage the tree's bark. Careless use of line trimmers shall be avoided. Certain non-selective, systemic herbicides may be used. Maintain the 24-inch diameter grass fee.

E. Turf Fertilization
1. Fertilizer will be applied in a manner which assures even distribution.
2. During winter, (November through February) fertilizations are not required. Required applications during this period shall be applied between March 1st and March 10th.
3. Water immediately after each fertilizer application.
4. Required fertilizer applications:
   a. Apply NPK 21-0-0 at a rate of 2.5-pounds per 1,000 square feet every two weeks for the first six weeks after turf installation. (three applications)
   b. Eight weeks after turf installation apply seasonal fertilizer. After that application, seasonal fertilizer shall be applied every 45 days. (two applications during a typical 120-day maintenance period) Application rates and fertilizer types are as follows unless otherwise specified:
      1) Spring (March through May): NPK Ratio 22-3-9 Ammonium Sulfate. Application ratio: 12-pounds per 1000 SF.
      2) Summer (June through August): NPK 15-15-15 Application ratio: 14-pounds per 1000 SF.
      3) Fall (September through October): NPK 16-6-8. Application ratio: 10-pounds per 1000 SF.
   c. The last seasonal fertilizer application shall be slow release, NPK 15-15-15 Endure.
   d. Iron (granular form): Apply at a rate of 10 pounds per 1,000 square feet every 45 days (two applications during a typical 120 day maintenance period.)

F. Turf Weed Control
1. Weeds shall be removed on a regular and continual basis, either manually or chemically, but no less than once a month. Weeds may be removed with approved effective herbicides. Broad leaf weeds and crabgrass, and other noxious weeds shall not be allowed to establish themselves in turf areas.

3.5 Irrigation System Operation

A. Irrigation system operation and monitoring is the continued responsibility of the contractor.

B. Irrigation system operation, adjustment, and overall supervision thereof, shall be the responsibility of the contractor.

C. The contractor shall inspect all irrigation areas at least twice per week during the maintenance period.

D. An irrigation specialist shall be made available on an "On Call Basis".

E. Do not permit watering times to conflict with Jones Gardens Office usage. Coordinate all visits with the Jones Gardens Office during and after office hours.

F. Irrigation controllers will be set to provide an appropriate amount of water to provide healthy plant growth and quality turf. Do allow run-off or ponding. During excessively hot weather, the quantities will vary to meet the current watering conditions and requirements.

G. The Las Vegas Valley Water District (LVVWD) has implemented a program to prevent water waste from the landscapes. The LVVWD first provides a warning for water that sprays or flows off of the property. If the matter is not corrected the property owner is fined by LVVWD. The fines are attached to the owner's water bill for each violation. If any water waste fines occur during the maintenance period the fines and associated administration cost will be back charged to the contractor. It is important that excellent water management procedures are adhered to during the maintenance period to prevent such fines or fees. Once the landscape maintenance period is completed and accepted in writing by Owner's Representative the contractor will be released of the maintenance duties and water violations that occur following the release date.

H. Irrigation System Repair and Maintenance

1. Repair and correct all malfunctions of valves, sprinklers, and irrigation lines responsibility will include, but not be limited to, repair of all main and lateral line breaks; valve cleaning and repair; head cleaning, repair, adjustment and replacement; controller maintenance and repair including electric connections and valves; height adjustment and extension of heads; and procurement of all parts and materials.
2. Drip and bubbler systems shall be inspected, flushed and adjusted as necessary. Provide a bi-weekly visual inspection of working emitters and bubblers. If nozzle performance is unsatisfactory, remove nozzles as required, remove debris build-up, flush head and reinstall sprinkler components per construction documents with specified screens, adapters, nozzles, etc. Adjust sprinkler body relative to grade as required to prevent accumulation of soil around riser and wiper seal during riser retraction. Fine tune nozzle adjustment with radius adjustment screw and ratcheting riser to site requirements.
3. Inspect each rotor and spray head weekly for proper pattern and distribution.
4. Inspect all areas of the site weekly for excess runoff. Where runoff is noted, adjust system components and operation to prevent excess runoff. If the complaints are received by LVVWD. The maintenance contractor is responsible for all fines and fees imposed on Housing Authorities for water run off.
5. Check all irrigation lines and heads for settling. Where settlement has occurred fill in the settled areas to match the intended grade remove sod when settling occurs in grass areas and replace with new sod, minimum sod size should be 18 inches in any direction.

3.6 FIELD QUALITY CONTROL

A. General

1. The Owner's Representative will inspect landscaping installation after receiving written notification that the landscape and irrigation work is functioning and acceptable. It is the contractors' responsibility to replace landscaping that is dead or appears dead within 10 days before the maintenance period ends
2. Grass areas that are not acceptable shall be guaranteed and maintained until approval is granted from the Owner's Representative.
3. See Weekly Maintenance Checklist Form M-1 and Product Usage Form M-2 in this specification section. The maintenance reports are to be submitted for each maintenance visit. All maintenance forms are to be copied and sent each week to the Architect.

END OF THE MAINTENANCE PORTION OF THIS SECTION

CONTINUE FOR MAINTENANCE FORMS

END OF SECTION

# WEEKLY MAINTENANCE CHECKLIST FORM M-1

Name of Maintenance Personnel: _____

Date of Maintenance Visit: _____

Signature of Jones Gardens Office Personnel: _____

Note in writing all action taken with each item listed below. Additional notes can be provided on separate attachment.

1. Distressed Plants
   - A. Trees
     1. Wind or other damage _____
     2. Diseased / Insect /Fertilizer _____
2. Potential Hazards
   - A. Trees
     1. Roots _____
     2. Branches _____
   - B. Irrigation
     1. Leaks _____
     2. Broken Heads _____
     3. Other _____
3. Tree Rings/Wells
   - A. Turf _____
   - B. Watering Wells _____
4. Tree Staking/Guying_____
5. Tree Pruning _____
6. Irrigation Management

A. Soil Probe Check (monitor moisture content in courtyard, grass areas, perimeter areas, raised planters and any other situation requiring a different irrigation schedule for full sun and shade exposures.):

| | | | |
|---|---|---|---|
| Trees (sun) | High ☐ | Moderate ☐ | Low ☐ |
| Trees (shade) | High ☐ | Moderate ☐ | Low ☐ |
| Shrub Areas (sun) | High ☐ | Moderate ☐ | Low ☐ |
| Shrub Areas (shade) | High ☐ | Moderate ☐ | Low ☐ |
| Court. Areas (sun) | High ☐ | Moderate ☐ | Low ☐ |
| Court. Areas (shade) | High ☐ | Moderate ☐ | Low ☐ |
| Lawns | High ☐ | Moderate ☐ | Low ☐ |

B. List the watering days and minutes of all of the irrigation valves in the table provided on the following page.

C. Note Control Valve time adjustments _____

D. List Current Flow Meter Gallonage Reading(s)_____

7. Note the Fertilizer type, amounts and location of applications

A. Turf _____

B. Plantings _____

C. Next application date Turf_____ Plantings _____

8. Weeding Locations _____

9. Debris/Clean up _____

10. Problem Drainage Locations _____

| Irrigation duration table | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Valve # | Plant material | Time (min.) | Valve # | Plant material | Time (min.) | Valve # | Plant material | Time (min.) |
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(IF ADDITIONAL ROOM IS NEEDED TO COMPLETE THE MAINTENANCE REPORTS ADD SUPPLEMENTAL SHEETS)

END OF FORM M-1

# PRODUCT USAGE DETAILS FORM M-2

Jones Gardens Complex

PEST / DISEASE CONTROL LOG ☐ FERTILIZER LOG ☐

PRE/POST-EMERGENT WEED CONTROL LOG ☐

*Application Area*_____

☐ Trees ☐ Shrubs, Ground Cover ☐ Turf ☐ Other Items

Date_____ Time of Day_____AM _____PM

Temperature _____Wind Speed _____

Product Name_____

EPA Number_____

Application Rate_____

Name of Applicator_____ Quantity_____

Comments_____

_____

_____

Comments for area of work (courtyard, garden etc.)_____

_____

_____

END OF FORM M-2

# PRODUCT USAGE SUMMARY FORM M-3

| Product | App. No. | Date(s) applied | App. ratio | Notes |
|---|---|---|---|---|
| **Turf** | | | | |
| 15-15-15 Triple Pro | | | | |
| | | | | |
| 15-15-15 Endure | | | | |
| Iron | | | | |
| | | | | |
| Seasonal Fertilizer (note type) | | | | |
| 21-0-0 | | | | |
| | | | | |
| | | | | |
| **TREE & SHRUB** | | | | |
| Anti-dessicant | | | | |
| Gro-Power Plus w/M | | | | |
| Agriform | | | | |
| Soils Plus | | | | |
| Soil sulphur | | | | |
| Gro-power | | | | |
| liquid 4-8-2 | | | | |
| Iron fertilizer | | | | |
| **TOPSOIL** | | | | |
| Soils plus | | | | |
| Gro-power plus | | | | |
| Soil Sulphur | | | | |
| **GENERAL** | | | | |
| Herbicides (note type) | | | | |
| Pesticides (note type) | | | | |
| Pre-emergent | | | | |
| **OTHER** | | | | |
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END OF FORM M-3

SECTION 32 11 23

AGGREGATE BASE COURSE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aggregate base course.

1.2 RELATED SECTIONS

A. Section 31 22 13 - Rough Grading: Preparation of site for base course.

B. Section 31 23 23 - Backfilling: Compacted fill under base course.

C. Section 31 23 16.13 - Trenching: Compacted fill under base course.

D. Section 32 12 16 - Asphaltic Concrete Paving: Finish asphalt surface course.

E. Section 32 13 13- Portland Cement Concrete: Finish concrete surface course.

F. Division 01 - General Requirements.

1.3 REFERENCES

A. AASHTO M147-65 - Materials for Aggregate and Soil - Aggregate.

B. ASTM C136 - Sieve Analysis for Fine and Course Aggregates.

C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb. (4.54 Kg) Rammer and 18-inch (457 mm) Drop.

D. ASTM D4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Samples: Submit 10 lb. (4.5 kg) sample of each type of aggregate to testing laboratory.

C. Submit under provisions of Sections 01 33 00 and 01 34 00.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works' standard.

B. Mixing Plant: Conform to Clark County Area Public Works' standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.6 PRODUCTS

A. Approved Equal.

PART 2 PRODUCTS

2.1 MATERIALS

A. Coarse Aggregate: Type II specified in Uniform Standard Specifications for Public Work's Construction Off-site Improvements Clark County Area, Nevada, Latest Edition.

B. Fine Aggregate: Natural river or bank sand; washed free of silt, clay, loam, friable or soluble materials.

C. Coarse Aggregate per item A above, shall be used under the building slab-on-grade.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify subgrade has been inspected, gradients and elevations are correct, and are dry.

3.2 AGGREGATE PLACEMENT

A. Spread coarse aggregate over prepared base to a total compacted thickness as shown on drawings.

B. Place coarse aggregate in 8-inch maximum layers and compact.

C. Level and contour surfaces to elevations and gradients indicated.

D. Compact placed aggregate materials to achieve compaction to 95 percent of its maximum dry density in accordance with ANSI/ASTM D1557.

E. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.

F. Use mechanical vibrating tamping in areas inaccessible to compaction equipment.

3.3 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot (3m) straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from True Elevation: Within 1/4 inch.

3.4 FIELD QUALITY CONTROL

A. Field inspection and testing will be performed under provisions of Division 01 - General Requirements..

B. Gradation of Aggregate: In accordance with ASTM C136.

C. Compaction testing will be performed in accordance with ANSI/ASTM D1557 and with Section 01 45 00.

D. If tests indicate Work does not meet specified requirements, remove work, replace, and retest at no cost to Owner.

E. Frequency of Tests: Each lift.

END OF SECTION

SECTION 32 13 13

CONCRETE PAVING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Concrete sidewalks and stair steps, curbs, and integral curb and gutters.

1.2 RELATED SECTIONS

A. Section 31 22 13 - Rough Grading: Preparation of site for base course.

B. Section 31 23 23 - Backfilling: Compacted fill under base course.

C. Section 32 11 23 - Aggregate Base Course: base course.

D. Section 32 12 16 - Asphaltic Concrete Paving: Asphalt wearing course.

E. Section 32 12 36.13 - Sealants: Sealant for joints.

F. Division 01 - General Requirements.

1.3 REFERENCES

A. ACI 301 - Specifications for Structural Concrete for Buildings.

B. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

C. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

D. ANSI/ASTM A497 - Welded Deformed Steel Wire Fabric for Concrete Reinforcement.

E. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction.

F. ANSI/ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

G. ASTM A615 - Deformed and Plain Billet-Steel for Concrete Reinforcement.

H. ASTM C33 - Concrete Aggregates.

I. ASTM C94 - Ready Mix Concrete.

J. ASTM C150 - Portland Cement.

K. ASTM C260 - Air-Entraining Admixtures for Concrete.

L. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

M. ASTM C494 - Chemical Admixtures for Concrete.

N. FS TT-C-800 - Curing Compound, Concrete, for New and Existing Surfaces.

1.4 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Product Data: Provide data on joint filler admixtures curing compounds.

C. Submit under provisions of Sections 01 33 00 and 01 34 00.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works' standards.

B. Obtain cementitious materials from same source throughout.

C. Perform Work in accordance with Clark County Area Public Works' standard.

D. Mixing Plant: Conform to Clark County Area Public Works' standard.

E. Obtain materials from same source throughout.

F. Maintain one copy of each document on site.

G. Submit under provisions of Sections 01 33 00 and 01 34 00.

H. Submit under provisions of Division 01 - General Requirements.

1.6 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

1.8 REGULATORY REQUIREMENTS

A. Conform to applicable standards for paving work on public property.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. Wood or Steel form material, profiled to suit conditions.

B. Joint Filler: ANSI/ASTM D1751 type; 1/2 inch thick.

2.2 REINFORCEMENT

A. Reinforcing Steel: ASTM A615; 60 ksi yield grade; deformed billet steel bars; unfinished.

B. Welded Steel Wire Fabric: Plain type, ANSI/ASTM A185; in coiled rolls; unfinished.

C. Dowels: ASTM A615; 40 ksi yield grade, plain steel, unfinished.

2.3 CONCRETE MATERIALS

A. Cement: ASTM C150 Sulfate Resistant - Type V Portland type, grey color.

B. Fine and Coarse Mix Aggregates: ASTM C33.

C. Water: Potable, not detrimental to concrete.

D. Air Entrainment: ASTM C260.

E. Chemical Admixture: ASTM C494, Type D - Water Reducing and Retarding.

2.4 ACCESSORIES

A. Curing Compound: FS TT-C-800, Type 1, 30 percent solids.

2.5 CONCRETE MIX - BY PERFORMANCE CRITERIA

A. Select proportions for normal weight concrete in accordance with ACI 301 Method 3.

B. Provide concrete to the following criteria:
Compressive Strength: 4500 psi @ 28 days.
Slump: 1 to 4 inches.
Air Entrained: 4-7 percent.

C. Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.

D. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted granular base is acceptable and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

3.2 SUBBASE

A. Section 32 11 23 - Aggregate Base Course forms the base construction for work of this Section.

3.3 PREPARATION

A. Moisten base to minimize absorption of water from fresh concrete.

B. Coat surfaces of inlet frames with oil to prevent bond with concrete pavement.

C. Notify Architect/Engineer minimum 24 hours prior to commencement of concreting operations.

3.4 FORMING

A. Place and secure forms to correct location, dimension, and profile.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

3.5 REINFORCEMENT

A. Place reinforcement at mid-height of slabs-on-grade.

B. Interrupt reinforcement at expansion joints.

C. Place dowels to achieve pavement and curb alignment as detailed.

D. Provide doweled joints 24 inch o.c. at interruptions of concrete with one end of dowel set in capped sleeve to allow longitudinal movement.

3.6 PLACING CONCRETE

A. Place concrete in accordance with Clark County Area Public Works' standards.

B. Ensure reinforcement, inserts, embedded parts, formed joints are not disturbed during concrete placement.

C. Place concrete continuously between predetermined construction joints.

D. Place concrete to pattern indicated.

3.7 JOINTS

A. Place expansion joints at 30-foot intervals or as shown on drawings. Align curb, gutter, and sidewalk joints.

B. Place joint filler between paving components and building or other appurtenances. Recess top of filler 1/4 inch sealant placement by Section 32 12 36.13.

C. Provide scored joint at locations shown on drawings. Sawcut contraction joints 3/16 inch wide at an optimum time after finishing. Cut 1/3 into depth of slab.

3.8 FINISHING

A. Area Paving: Light broom.

B. Sidewalk Paving: Light broom.

C. Curbs and Gutters: Light broom.

D. Place curing compound on exposed concrete surfaces immediately after finishing. Apply in accordance with manufacturer's instructions.

3.9 FIELD QUALITY CONTROL

A. Field testing will be performed under provisions of Section 01 33 00.

B. Testing firm will take cylinders and perform slump tests in accordance with ACI 301.

C. One additional test cylinder will be taken during cold weather and cured on site under same conditions as concrete it represents.

D. One slump test will be taken for each set of test cylinders taken.

E. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.10 PROTECTION

A. Immediately after placement, protect pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.

END OF SECTION

SECTION 32 17 23

PAVEMENT MARKING

PART 1 GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division One Specification Sections apply to this Section.

B. Division 01 - General Requirements.

1.2 SUMMARY

A. This Section includes all labor, equipment, and services to paint following items of types, patterns, sizes and colors as shown on drawings:
1. Parking Stripes
2. Traffic Arrows
3. International Symbol of Accessibility
4. Curbs

B. Related Work:

1. Pavement Marking Contractor shall verify compatibility with sealers, joint sealants, caulking and all other surface treatments as specified in Division 7.

1.3 SUBMITTALS

A. Provide paint specifications data indicating adherence to following:
1. Acceptance date, by Federal, State and/or Local requirements.
2. Use of paint.
3. Pigment type and content.
4. Vehicle type and content.
5.

B. Provide acceptance date certification that paint supplied meets or exceeds requirements of heading “Materials” below.

C. Submit list of similar projects (minimum of five) where pavement marking paint has been in use for a period of not less than two years.

D. Material Safety: Contractor shall provide Engineer/Architect with Material Safety Data Sheets (MSDS) for all materials and supplies used.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with Clark County Area Public Works’ standard.

B. Mixing Plant: Conform to Clark County Area Public Works’ standard.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

E. Submit under provisions of Sections 01 33 00 and 01 34 00.

F. Submit under provisions of Division 01 - General Requirements.

1.5 ACCEPTABLE MANUFACTURERS

A. Approved Equal.

PART 2 PRODUCTS

2.1 MATERIALS

A. Chlorinated Rubber based paint shall meet requirements of AASHTO M248-91.

B. Thermoplastic based paint shall meet requirements of AASHTO M249-79.

C. Paint shall be manufactured and formulated from first grade raw materials and shall be free from defects or imperfections that might adversely affect serviceability of product.

D. Where Specifically Noted on Drawings: Color of paint shall be white and daylight directional reflectance (without glass beads) shall not be less than 82% when tested in accordance with Federal Test Method Standard 141a, Method 6121.

E. Unless otherwise noted on Drawings: Color of paint shall be yellow and shall match Federal Color Chip No. 33538. Color shall have daylight directional reflectance (without glass beads) of not less than 52% when tested in accordance with Federal Test Method Standard 141A, Method 6121. (Existing traffic markings are white and are being intentionally changed to Yellow to increase visibility.

F. Paint color for blue accessible parking space pavement markings shall match Federal Color Chip No. 35180. Color shall have daylight directional reflectance (without glass beads) of not less than 52% when tested in accordance with Federal Test method Standard 141A, Method 6121. Prior to installing any blue traffic markings, a white paint background stripe or shape one-inch wider than the required pavement marking shall be installed with the blue paint installed onto the new white background after it has dried sufficient to be recoated. Note: Symbol of accessibility may be painted on a rectangular white background rather than on a white background, which mimics the shape of the symbol itself.

G. Following types of paint products are pre-approved for this project:
1. Chlorinated Rubber (two coat application is required).
2. Thermoplastic

H. Beads (Glass Spheres) shall conform to Federal Specification TT-B-1325, and shall be applied to wet paint film at rate not less than six pounds per gallon of paint. Test for bead adhesion shall be conducted in accordance with Federal Specification TT-P-850 Section 4.3.6 excepting Section 4.3.6.2. Application of beads shall coincide with application of paint, but shall be done as separate operation. Contractor shall inspect surface areas for excess beads after installation and shall remove excess beads to prevent a slip hazard.

I. International Symbol of Accessibility to follow proportions shown in ANSI A117.1-1992 and Americans with Disabilities Act (ADA) – 1991.

PART 3 EXECUTION

3.1 EXAMINATION

A. Inspect surfaces to which paint will be applied and report immediately in writing to Engineer/Architect as required in General Conditions any conditions detrimental to proper execution of the Work.

B. Do not proceed until unsatisfactory conditions are acceptably remedied.

C. Striping shall not be placed until full cure of concrete sealer (generally, 14 days @ 70ºF or higher) or bituminous (generally, 30 days @ 45ºF or higher) has been obtained.

3.2 PREPARATION

A. Before commencing work, make certain that Work to be painted is in proper condition to receive painting materials, that surfaces are clean, dry, smooth, and at proper temperature as recommended by paint manufacturer.

B. Do not paint or finish any surface, which is wet or damp.

C. Clean all surfaces free of adhering foreign matter, dirt and dust.

D. Lay out all striping on each tier, using dimensions and details shown on plans, before painting that tier. Report any discrepancies, interferences or changes in striping due to field conditions to Engineer/Architect prior to painting. Pavement Marking Contractor shall be required to remove paint, repair surface treatment and repaint stripes not applied in strict accordance with plans.

E. Where existing painted pavement markings and/or stripes conflict with new striping layout or must be removed due to installation which does not conform to contract requirements, remove existing paint markings, using care to avoid scarring substrate surface.

1. Concrete and Asphalt Surfaces: Material shall be removed by methods meeting approval of Engineer/Architect and cause as little damage as possible to surface texture of pavement. Methods, which can provide acceptable results, are grinding and air or shot blasting. Collect residue generated by removal of pavement markings and dispose of as required by all applicable laws and regulations. If grinding is used, lightly grind floor surface using wheel mounted floor grinder or similar equipment with positive elevation control of grinder head. For all removal techniques: On test area, demonstrate to Owner acceptable removal of paint material and control of paint removal equipment to prevent substrate scarring.
2. Traffic Topping/Membrane Surfaces: Remove existing pavement markings by solvent washing or high-pressure water washing. Submit letter from traffic topping/membrane manufacturer certifying that solvents and/or water pressures are acceptable for this use and will not damage material. On test area, demonstrate to Owner acceptable removal of paint material and control of paint removal equipment to prevent substrate scarring.
3. Contractor shall not use paint, bituminous bond coat, or other methods of covering markings to obliterate existing pavement markings.
4. Material deposited on pavement as a result of removal shall be removed as work progresses. Accumulation of material, which might interfere with drainage or might constitute a hazard to traffic, is not permitted.
5. Curing compounds on new concrete surfaces (less than one year old) shall be removed per existing pavement marking removal requirements prior to installation markings.

F. Work Areas:

1. Store, mix and prepare paints only in areas designated by Contractor for that purpose.
2. Provide clean cans and buckets required for mixing paints and for receiving rags and other waste materials associated with painting. Clean buckets regularly. At close of each day's work, remove used rags and other waste materials associated with painting.
3. Take precautions to prevent fire in, or around, painting materials. Provide and maintain appropriate hand fire extinguisher near paint storage and mixing area.

G. Mixing:

1. Do not intermix materials of different character or different manufacturer.
2. Do not thin material except as recommended by manufacturer.

H. Disposal:

1. Contractor shall properly dispose of unused materials and containers in compliance with Federal Resource Conservation Recovery Act (RCRA) of 1976 as amended and all other applicable laws and regulations.

3.3 APPLICATION

A. For concrete surfaces apply paint in two-coat system with total minimum wet thickness of 15 mils. First coat must be cured prior to installation of second coat.

B. For bituminous-based asphalt surfaces apply paint in two coat system; first coat to be 50% of total minimum wet mil thickness, not to exceed eight mils, to reduce lifting and cracking of asphalt surface. First coat must be cured prior to installation of second coat.

C. Apply painting and finishing materials in accordance with manufacturer's directions. Use applications and techniques best suited for material and surfaces to which applied. Minimum air shall be used to prevent over spray. Temperature during application shall be a minimum of 40ºF., unless manufacturer requires higher minimum temperature. Maximum relative humidity shall be as required by manufacturer.

D. All lines shall be straight, true and sharp. Corners shall be right angles, unless shown otherwise, with no overlaps. Line width shall be uniform (-0%, +5% from specified width).

3.4 CURBS

A. Paint vertical surface of all curbs and the first six inches of the abutting horizontal surface.

B. Use paint and yellow color specified in Part Two heading "Materials."

3.5 APPLICATION OF TEMPORARY PAVEMENT MARKING

A. Temporary pavement markings shall be applied after paving, but before being opened to traffic and parking.

B. Temporary pavement markings that are improperly applied and come loose shall be replaced at Contractor's expense, as directed by Engineer/Architect.

C. Temporary pavement markings on finished pavement surface shall be installed allowing for lateral tolerance of $\pm$2 inches center-to-center. Temporary pavement markings that are installed outside specified lateral tolerances shall be removed and replaced, as directed by Engineer/Architect, at Contractor's expense.

D. All marking shall have width of four inches unless otherwise specified. Markings shall be either white or yellow per contract drawings.

E. Preformed tape shall be applied and removed per manufacturer's instructions.

F. All temporary pavement markings shall be removed prior to placing permanent pavement markings.

END OF SECTION

**SECTION 32 18 16.13**
**PLAYGROUND PROTECTIVE SURFACING**

## PART 1 GENERAL

### 1.1 SECTION INCLUDES:

A. Resilient Playground Surfacing-Pour-in-place system.

### 1.2 RELATED WORK:

A. Playground Equipment, Resilient Playground Surfacing Sub-base.

### 1.3 PERFORMANCE:

A. Provide all necessary materials, labor, tools and equipment to perform the work included in the section for the installation of the pour-in-place resilient playground surfacing.

### 1.4 QUALITY ASSURANCE:

A. Manufacturer shall manufacture and install pour-in-place surfacing systems to current ASTM 1292-04 test criteria.

B. The installation of the pour-in-place G-Flex system shall be completed by the manufacturer's certified installation contractor:

### 1.5 SUBMITTALS

A. Manufacturer's product literature and specification data.

B. ASTM 1292-04 impact attenuation test certification for the pour-in-place system to be installed to match the Critical Fall Height (CFH) requirements of the playground equipment to be installed in conjunction with the pour-in-place surfacing.

C. Statement of Warranty for a minimum five year pro rated period with detailed warranty claim requirements by the Owner and specific procedures to be followed by the Manufacturer in terms of response and repair of warranty claims.

## PART 2 MATERIALS

### 2.1 PRODUCTS

A. G- Flex Pour-in-Place System
   1. Manufacturer: OTS Company, Lexington, SC (800) 233-0876

B. Description: A dual-durometer pour-in-place system with a wearing layer upper membrane and an underlying impact attenuation cushion layer.

C. The finished surface shall be porous and capable of being installed at a varying thickness to comply with the Critical Fall Height (CFH) requirements of the playground equipment to be installed with the surface.

D. The G-Flex pour-in-place system shall be manufactured from EPDM and SBR rubber compounds mixed with a Rosehill FLEXILON polyurethane (MDI) binder. Polyurethane binders containing any trace of TDI shall not be permitted due to environmental regulations.

E. The cushion course shall be a mixture of 3/8" shredded SBR rubber with a Rosehill Flexilon polyurethane binder mixed and applied to 100% of the rubber and installed to a designated thickness specified as compliant to the ASTM 1292 test results for the appropriate Critical Fall Height (CFH) of the equipment.

F. The wearing layer shall be a mixture of black and/or colored EPDM rubber bonded by a Rosehill Flexilon polyurethane binder applied to a thickness of ½" over the cushion layer.

G. Color blend and selection to be specified on the Construction Documents.

## PART 3 EXECUTION

### 3.1 INSTALLATION PROCEDURE (GENERAL)

A. G-Flex pour-in-place surfaces can be installed over any stable and well drained subsurface including concrete, asphalt, or compacted crushed stone. Concrete or asphalt is the most stable base and must be fully cured prior to applying an overlay of a rubberized surface. A crushed stone base will be subject to freeze/thaw movement and must be compacted and underdrained. If a crushed stone base is used, a light geotextile fabric overlay is recommended.

### 3.2 INSTALLATION PROCEDURE – BASE LAYER

A. If the G-Flex system is to be installed over a crushed stone base, check the stone base for compaction and planarity. Fill and compact any areas out of tolerance. A level tolerance shall be +/- ¼" when measured with a ten foot straight edge.

B. Overlay the geotextile fabric.

C. Set screeds and reference points to control the desired thickness of the base layer to be installed.

D. Thoroughly mix the proper quantities of SBR rubber and Flexilon polyurethane binder using a ribbon-blade mortar type mixer until the SBR is uniformly coated with binder. The mixing process takes 1-3 minutes, depending on the mixer, batch size and temperature.

E. Apply the base layer material using hand trowels and screeds to the desired thickness.

F. If the G-Flex system is to be installed over asphalt or concrete, prime the edge of the surface to assure a good bond. Finish the top of the base layer to the thickness required.

G. The base layer should exhibit a uniform density after troweling to an even and uniform thickness.

H. Curing time is based on temperature and humidity. Do not install when temperature is lower than 45F.

3.3 INSTALLATION PROCEDURE – WEARING LAYER

A. After proper cure of the base layer material, apply a primer along the perimeter edge of the base material, where necessary.

B. Thoroughly mix the proper quantities of EPDM rubber and Flexilon polyurethane binder using a ribbon-blade mortar type mixture until the EPDM is uniformly coated with binder. The mixing process takes 1-3 minutes, depending on the mixer, batch size and temperature.

C. Deposit and evenly spread the wearing course mixture along the screed and carefully hand trowel the material to a uniformly compacted density and finished thickness of ½".

D. On large areas, plan the work so that a probable day seam is in the least objectional location. If a seam is required, prime all previously laid edges, shapes, or special graphic areas prior to application of the material at the seams.

3.4 CURING OF SURFACE

A. The G-Flex pour-in-place surface must be protected from any foot traffic until properly cured. The curing time will depend on prevailing weather conditions but the surface must remain protected from traffic for 24-48 hours after completion.

**END OF SECTION 32 18 16.13 – PLAYGROUND PROTECTIVE SURFACING**

**SECTION 32 84 00**

**LANDSCAPE IRRIGATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pipe and fittings, valves, sprinkler heads, outlets, emitters and accessories.

B. Connection to utilities.

C. Control system.

1.02 RELATED SECTIONS

A. Divisions 32
   1. 32 93 00 Landscape plants

1.03 REFERENCES

A. American National Standards Institute / American Society for testing and Materials (ANSI / ASTM). D 2564 Solvent Cement for Polyvinyl Chloride (PVC) Plastic Pipe and Fittings.

B. American National Standards Institute / American Society for testing and Materials (ANSI / ASTM). F 656 Standard Specification for Primers for Use in Solvent Cement Joints of Polyvinyl Chloride Plastic Pipe and fittings.

C. American National Standards Institute / American Society for testing and Materials (ANSI / ASTM). D 2672 Standard Specification for Joints for IPS PVC Pipe Using Solvent Cement.

D. American Society for Testing and Materials (ASTM). D 2241 Polyvinyl Chloride Plastic Pipe (SDR-PR).

E. American Society for Testing and Materials (ASTM), D1785 Standard Specifications for Polyvinyl Chloride Plastic Pipe, Schedules 40, 80, and 120.

F. American Society for Testing and Materials (ASTM). D 2855 Standard Practice for Making Solvent-Cemented Joints with Poly Vinyl Chloride (PVC) Pipe and Fittings.

G. American Society for Testing and Materials (ASTM), F 1498 Standard Specifications for Taper Pipe Threads 60º for Thermoplastic Pipe and Fittings.

H. American Water Works Association (AWWA). C-900 and C909 Ring Tight Pipe and Fittings.

I. Federal Specifications O-F-506 Flux, Soldering; Paste and Liquid.

J. Federal Specifications A-A-58092 Tape, Antiseize, Polytetrafluorethylene.

K. National Electric Manufacturer's Association (NEMA).

L. Certified Landscape Irrigation Auditor manual (current edition) – The Irrigation Association.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements, Codes, and Standards:
   1. Provide certificate of compliance from authority having jurisdiction indicating approval of products in system.

2. Comply with requirements of utility supplying water for prevention of backflow and back siphonage.

B. Installer Qualifications and Requirements:
1. Licensed in the state of Nevada with a C-10 license.
2. Installer having minimum (5) five years documented experience in irrigation systems similar in material, design, and extent to work indicated and having a successful record of service performance.
3. Irrigation contractor; Individuals that install rigid PVC piping including flexible PVC piping and solvent cement for projects similar to work.
4. Irrigation certification: The contractor shall employ an individual with one of the following certifications. The certified individual shall be present on site as noted below.
   a. Certified Irrigation Contractor, certified and current with the Irrigation Association, Falls Church, VA. One (1) individual on site during the installation of the irrigation system a minimum of 50 percent of the time.
   b. Certified Irrigation Installer, certified and current with Irrigator Technical Training School, Chino, CA. One (1) individual on site during the installation of the irrigation system a minimum of 95 percent of the time.

C. Listing/Approval Stamp, Label, or Other Markings on equipment, specialties, and accessories made to specified standards.

D. Listing and Labeling: Equipment, specialties, and accessories listed and labeled in National Electrical Code, Article 100.
1. Listing and Labeling Agency Qualifications: A Nationally Recognized Testing Laboratory (NRTL) as defined in OSHA Regulation 1910.7.

E. Product Options: Irrigation system piping, specialties, and accessories are based on specific types, manufacturers, and models indicated. Components with equal performance characteristics produced by other manufacturers may be considered, provided deviations in dimensions, operation and other characteristics do not change design concept or intended performance as judged by the Owner's Representative. The burden of proof of product equality is on the Contractor. Refer to Section 01 60 00.
1. All piping, fittings, components, and accessories shall be of domestic manufacture.

F. The contractor shall have readily available a copy of related specifications and plans on site at all times.

1.05 SUBMITTALS

A. Submit under provisions of Section 01 33 00.

B. Manufacturer's Installation Instructions: Irrigation ontroller and related accessories and equipment.

C. Submit current license or certifications for:
1. State of Nevada C-10 License
2. Staff attendance to PVC Solvent Cementing Training Class. A minimum of (1) staff member shall attend.
3. One of the following certificates showing status as current and in good standing:
   a. Certified Irrigation Contractor
   b. Certified Irrigation Installer

1.06 PROJECT RECORD DOCUMENTS

A. Submit under provisions of Section 01 33 00.

B. Project Record Drawing:
1. At onset of irrigation installation the Contractor shall obtain a set of the irrigation drawings for their record set.
2. At end of each day the record drawings are to be updated with the current changes by a qualified draftsperson.

3. All up-to-dates shall be submitted to the Owner's Representative each week for review and comments (Photo Copies are acceptable).
4. A Master Copy of the Record Drawings shall be kept at the Project Site.
5. Dimensions are required from two permanent points of reference such as; building corners, sidewalk, fencing, road intersections or permanent structures. Provide dimensioned locations for the following:
    a. Connection points to existing water lines
    b. Pressurized Mainline (dimensions required every 50 feet)
    c. All Sleeves (both ends)
    d. Irrigation control valves
    e. All gate valves
    f. Wire splices
    g. Control wire routing
    h. Concealed components
    i. Other related equipment as directed by Owner's Representative.
    j. Changes in lateral piping.
6. Owner's Representative will not certify any pay request submitted by the Contractor if the weekly record drawings are not current. Processing of pay request will not occur until records are updated.

C. Owner's Representative to review and approve all completed as-built.

1.07 OPERATION AND MAINTENANCE DATA

A. Submit under provisions of Section 01 33 00.

B. Provide instructions for operation and maintenance of system and controls and manufacturer's parts catalog.
1. Pressure regulations.
2. Valves, including automatic control valves.
3. Sprinklers.
4. Clock controller systems.
5. Emitters
6. Filters

C. Contractor to provide schedule-indicating length of time each valve is required to be open to provide an adequate amount of water for four seasonal watering times. Take into account sun exposure, shade and other physical conditions surrounding the site or building.

D. Water schedule should reflect information and catch base readings provided by the water audit.

1.08 REGULATORY REQUIREMENTS

A. Conform to applicable code for piping and component requirements.

1.09 FIELD MEASUREMENTS AND VERIFICATIONS

A. Verify that field measurements match the drawings. If they do not match the drawings, do not proceed without notifying the Owners Representative in writing.

B. Check current water pressure at the meter or point of connection to the irrigation system.

1.10 DELIVER, STORAGE, and HANDLING

A. Deliver, unload, store, and handle materials, packaging, bundling, and products, in dry, weatherproof condition to prevent damage, breakage, deterioration, intrusion, ignition, and vandalism. Deliver in original unopened packaging containers prominently displaying manufacturer name, volume, quantity, contents, instructions, and conformance to local, state, and federal law. Remove and replace cracked, broken, or

contaminated items or elements prematurely exposed to moisture, inclement weather, snow, ice, temperature extremes, fire, or jobsite damage.

B. Handling of PVC Pipe: Exercise care in handling, loading and storing of PVC pipe. All PVC pipe shall be transported in a vehicle that allows length of pipe to lie flat so as not to subject it to undue bending of concentrated external loads. All sections of pipe that have been dented or damaged shall be discarded, and if installed, shall be removed and replaced with new piping.

1.11 PROJECT CONDITIONS

A. Perform site survey, research public utility records, and verify existing utility locations.

B. Protection of Property:
1. Preserve and protect all trees, monuments, structures, and paved areas from damage due to Work of this Section, In the event damage does occur, all damage to inanimate items shall be completely repaired or replaced to satisfaction of Owner. All injury to trees, shrubs, and ground covers shall be repaired by Contractor, and all costs of such repairs shall be charged to and paid by Contractor.
2. Protect buildings, walks, walls, landscaping, irrigation system, and other property from damage. Flare and barricade open ditches. Damage caused to asphalt, concrete, landscaping, irrigation system, or other building materials surfaces shall be repaired or replaced at no cost to Owner. Restore disturbed areas to original condition.

C. Existing Trees Conditions:
1. All trenching or other Work under limb spread of any tree or shrub shall be done by hand or by other methods so as to prevent damage to limbs, branches and roots.
2. Where it is necessary to excavate adjacent to existing trees, use all possible care to avoid injury to trees and tree roots. Excavation, in areas where 1-1/2 inches and larger roots occur, shall be done by hand. Roots 2-inches or larger in diameter, except directly in the path of pipe of conduit, shall be tunneled under and shall be heavily wrapped with burlap to prevent scarring or excessive drying. Where a trenching machine is operated close to trees having roots smaller than 2-inches in diameter, a wall or trench adjacent to tree shall be hand trimmed, making clean cuts through roots. Roots 1-inch and larger in diameter shall be painted with two coats of “Tree Seal”. Trenches adjacent to trees shall be closed within 24 hours, and when this is not possible, side of trench adjacent to tree shall be kept shaded with moistened burlap or canvas.

D. Protection and Repair of Underground Lines:
1. Request proper utility company to stake exact location (including depth) of all underground water, electric, gas, or telephone lines. Take necessary precautions to protect the underground lines from damage. In the event damage does occur, all damage shall be repaired by Contractor, and all costs of such repairs shall be paid by Contractor unless other arrangements have been made.

E. Replacement of Paving and Curbs: Where trenches and lines cross existing roadways, paths, curbing, etc., damage shall be kept to a minimum and shall be restored to original condition.

F. Cleaning: Maintain continuous cleaning operation throughout duration of Work. Dispose of, off-site at no additional cost to Owner, all trash or debris generated by installation of irrigation system.

1.12 SEQUENCING AND SCHEDULING

A. Maintain uninterrupted water service to building during normal working hours. Arrange for temporary water shutoff with Owner.

B. Coordinate work with site backfilling, landscape grading, and delivery of plant material.

1.13 EXTRA MATERIALS

A. Provide the following extra components under provisions of Section 01 33 00.

1. Fifty (50) each of emitters of each type used.
2. Provide the following if the product is used during installation:
   a. Two hundred fifty (100) feet of Excalibur Poly Piping.
3. Provide one (1) tool to open large valve boxes.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Products: irrigation spray and rotor heads, electrical and manual valves, quick couplers, bubblers, and controllers. All hydraulic calculations were derived from the products indicated on the irrigation schedule noted on the drawings. The Owner's Representative must approve any substitutions to the products listed on the irrigation schedule. Additional Equipment list:
   1. Febco: Back flow prevention device, see civil drawings
   2. Rainbird: Remote control valves
   3. Rainbird: Basket filter after drip irrigation valves
   4. Senninger: Pressure reducing valve for drip irrigation
   5. Salco: Emitters
   6. Netafim: Inline drip tubing
   7. Carson, Dura Plastics, or Pentek: Valve Boxes
   8. Ford or A. Y. McDonald: Saddles
   9. Nibco, Hammon, or Milwaukee: All brass gate valve
   10. Nibco or Clow: All iron gate valve
   11. Griswold Controls or Superior Controls: master valve and accessories
   12. Data Industrial: Flow meter and accessories
   13. GPH Irrigation or Salco: Flexible IPS Piping
   14. Rainbird: Irrigation controller
   15. Trench backfill rock and aggregate free
   16. Items not listed, see Irrigation Schedule on irrigation drawings

2.02 MATERIALS

A. Sand Irrigation Trench Backfill
   1. Free of rubbish, concrete, asphalt, glass, rubber, organic materials, stones larger than 1/16" diameter, and other debris.
   2. Construction grade.

B. General Piping:
   1. Pressure Supply Lines
      a. Pipe 1-inch to 4-inches Schedule 40 PVC, unplasticized PVC 1120, 1220 National Sanitation Foundation (NSF) approved pipe extruded from material meeting the requirements of Cell Classification D12454-A or 12454-B, ASTM Standard D1784 and D1785, with an integral belled end.
   2. Lateral Piping:
      a. Pipe 3/4-inch to 3-inches Schedule 40 PVC rigid, unplasticized PVC 1120, 1220 National Sanitation Foundation (NSF) approved pipe extruded from material meeting the requirements of Cell Classification D12454-A or 12454-B, ASTM Standard D1784 and D1785, with an integral belled end.
      b. Pipe 4-inches and larger; AWWA Standard C-900 or C-909, Class 150, 150-PSI minimum, DR-18 pressure rating pipe, ASTM Standard D1784, with an integral belled end. The joint design shall meet ASTM D3139 Joint qualification performance testing requirements, with the elastomeric seals Gaskets) manufactured in compliance with ASTM F477.
   3. Sleeving:
      a. Schedule 40 PVC (6" and smaller) rigid, unplasticized PVC 1120, 1220 National Sanitation Foundation (NSF) approved pipe extruded from material meeting the requirements of Cell Classification D12454-A or 12454-B, ASTM Standard D1784 and D1785, with an integral belled end.

b. SDR 21, Class 200 PVC (8" and larger) rated at 200 PSI, rigid, unplasticized polyvinyl chloride (PVC) 1120, 1220 National Sanitation Foundation (NSF) approved pipe extruded from material meeting the requirements of Cell Classification D12454-A or 12454-B, ASTM Standard D1784 and D1785, with an integral belled end.
c. Install separate sleeve beneath paved areas to route each run of irrigation pipe or wiring bundle.
d. Sleeving diameter: minimum two sizes larger than the piping inside, equal to twice that of the wiring bundle. Exception: where sleeving on the irrigation plan exceeds this requirement, the larger piping shall be installed.
e. Wire sleeves shall be a minimum of 2-inch Schedule 40 PVC.

C. Solvent Welding:
1. PVC piping 4 inches and smaller, use IPS 705 or 721 cement
2. Main line PVC piping 3 inches and larger, use IPS 711 cement
3. IPS flexible PVC piping (Salco), use IPS-795 cement
4. All PVC piping, including IPS flexible PVC pipe, use IPS P-70 primmer

D. Plastic Pipe and Fittings:
1. Identification Markings:
a. Identify all pipe with following indelible markings:
1) Manufacturer's name.
2) Nominal pipe size.
3) Schedule of class.
4) Pressure rating.
5) NSF (National Sanitation Foundation) seal of approval.
6) Date of extrusion.
2. Solvent Weld Pipe - Manufactured from virgin poly vinyl chloride (PVC) compound in accordance with ASTM D2241 and STM D1784; cell classification 12454-B, Type 1, Grade 1.
a. Fittings - Standard weight, Schedule 40, injection molded PVC; complying with ASTM D1784 and D2466, cell classification 12454-B.
1) Threads - injection molded type (where required).
2) Tees and Ells - Side gated.
b. Fittings - Schedule 80, injection molded PVC; complying with ASTM D1785 and D2467, cell classification 12454-B.
c. Threaded Nipples - ASTM D2464, Schedule 80 with molded threads.
d. Joint Cement and Primer - (ANSI/ASTM D2564).
3. Ring tight PVC Pipe Fittings: Epoxy Coated Ductile iron Grade 65-45-12, gasketed, deep bell with joint restraints for change of direction in mainline on 4 inch and larger pressure pipe only.
a. Do not use for connection of valves to mainline.
b. Reducers and plugs to be provided with bolt-on links.
c. All fittings to have four lugs to accommodate joint restraints in any orientation.
d. Provide joint restraints on fittings 4 inches and larger as per manufacturer recommendations.
e. Approved Manufacturers: Napac, Tyler, Sigma, Waterous or equal.
4. Dielectric Fittings: Assembly or fitting with insulating material isolating joined dissimilar metals to prevent galvanic action and stop corrosion. These devices are a combination of copper alloy and ferrous metal threaded-end solder-end types, matching piping system materials.
a. Dielectric Unions: Factory-fabricated, union assembly, designed for 250-psig (1725 kPa) minimum working pressure at 180 degrees F (82 degrees C). Include insulating material isolating dissimilar metals and ends with inside threads according to ASME B1.20.1.
b. Dielectric Flanges: Factory-fabricated, companion-flange assembly for 150 psig (1035 kPa) or 300 psig (2070 kPa) minimum pressure to suit system pressures.
c. Transition Fittings: Manufactured assembly or fitting, with pressure rating at least equal to that of system and with ends compatible to piping where fitting is to be installed.
5. Joining Materials: Refer to Basic Mechanical Materials and Methods for joining materials not included in this section.
a. Primer, IPS P-70 (ASTM 656) Provide for all solvent cemented connections
b. Solvent Cement, IPS 705 or 721 (ASTM 2564) clear medium bond for all rigid PVC pipe.
c. Solvent Cement, IPS 711 (ASTM 2564) gray medium bond for main line PVC pipe over 3 inches.
d. Solvent Cement, IPS 795 (ASTM 2564) for all flexible PVC pipe such as the Salco pipe.

e. Solder: ASTM B 32, Alloys Sn95 and E.
f. Gaskets and fasteners for metal and metal-to-plastic flanged joints: ASME B16.21, nonmetallic, asbestos-free, flat, 1/8 inch (3-mm) thickness gaskets and ASME B18.2.1, stainless steel bolts, butts and washers.
g. Gaskets for plastic flanged joints: Materials recommended by plastic pipe and fittings manufacturer.
h. PTFE sealing tape (Teflon® Tape) shall have a minimum thickness of 3.5 mil, minimum of 1.2 density, and meet with FED. MIL SPEC A-A58092.

E. Drip Irrigation:
1. Drip lateral piping Manufactured by GPH Irrigation, Excalibur, or approved equal:
a. Flexible PVC piping ½-inch IPS and ¾-inch IPS. PVC flexible pipe will conform to ASTM D-2287 with standard outside diameters compatible with PVC IPS solvent-weld fittings, resistant to UV radiation, uniformly black in color, homogeneous throughout and smooth inside and outside, free from foreign materials, cracks, holes, dents, wrinkles and blisters..
1) Durometer Hardness (A Scale) - 88 to 94 tested per ASTM Method D2240
2) Specific Gravity, nominal - 1.40 to 1.44 tested per ASTM Method D792(A)
3) Tensile Strength, minimum - 1,800 psi tested per ASTM Method D412
4) Brittleness Temp., maximum - 15 C tested per ASTM Method D746(A)
b. All Excalibur pipe connections shall be made with approved insert fittings. The fittings shall be UV resistant, one-piece construction, and have a maximum working pressure of 50 psi.
c. All Excalibur pipe connections shall be made with approved insert fittings. The fittings shall be UV resistant, one-piece construction, and have a maximum working pressure of 50 psi.

2.03 VALVES

A. Gate Valves:
1. Gate Valves for 3/4 inch to 1-1/2 inches matching pipe size – Shall have brass construction; solid wedge, IPS threads, and non-rising stem with brass butterfly operating handle.
2. Gate Valves 2 inches and larger: Thread connection, Non-rising Stem, AWWA C509, resilient seated; bronze stem, cast iron, or ductile iron body and bonnet, stem nut, 200 psi working pressure; and ends that fit NPS dimensions, PVC pipe. Include elastomeric gaskets. Napac, Nibco, Clow, or equal. Ten (10) year warranty required.
3. Gate valves 2 ½ inches and under shall be threaded.
4. Gate valves 3 inches in size shall be push-on with joint restraints per manufacturer's specifications and stainless steel bolts and nuts.
5. Gate valves 4 inch and larger:
a. Above grade gate valves are to be flanged connections with stainless steel bolts and nuts.
b. Below grade gate valves are to be push-on or ring tight connections with joint restraints per manufacturer's specifications.

B. Plastic Ball Valves: PVC with 235 psi minimum working pressure rating, ends compatible with piping where valve is to be installed. Spears, or equal.

2.04 REMOTE CONTROL VALVES

A. Normally closed, 24 VAC, 50/60 cycle solenoid actuated globe pattern with pressure rating of 200 PSI minimum. The valve body and bonnet shall be constructed of heavy-duty gall-filled UV-resistant nylon and have stainless steel studs and flange nuts; diaphragm shall be of nylon reinforced nitrile rubber. Internal bleed manual open/close control. Manual flow control with brass or stainless steel stem.

2.05 VALVE BOXES AND VALVE VAULTS

A. Valve Boxes and covers shall be Carson, Dura Plastics, or Pentek:
1. Heavy-duty and will be constructed with high-density polyethylene structural foam.
2. Valve boxes shall have locking equipment provided
3. Green in color for turf areas
4. Tan in areas other than turf

5. Provide extensions for length required for depth of bury of valve.
6. Standard 12 inches deep rectangular valve boxes are to be used for electric solenoid turf valves and wire splices.
7. Jumbo 12 inches deep rectangular valve boxes with extension, when required, are to be used for all drip control valves.
8. 12-inch round valve box is required for all gate valves, quick coupler valves, manual control valves, pressure regulators (if separate from drip control valves), and drip flushing valves.
9. Utility Vault
10. If any of the equipment is too tight, enlarge the box size. Confirm selection with Owner's Representative.

2.06 SPRINKLERS

A. Provide uniform coverage over the entire area of spray show on Drawings at available water pressure.

B. Manufacturer: As shown on the plans.

C. Tree and Shrubs: Drip emitters

D. Pop-up Fixed Spray: Fixed pattern, with screw type flow adjustment and stainless steel retraction spring.

E. Pop-up Rotary: Gear drive, full circle and adjustable part circle type.

2.07 EMITTERS AND DEVICES

A. Pressure Regulators: Pressure regulator shall be attached down stream from valve on all lines with drip emitters or inline tubing.
1. The pressure regulator shall have a 6% variance of design pressure, construction of high-impact engineering-grade thermoplastics with stainless steel compression spring and securing screws.
2. Senninger model PMR-MF-40 or approved equal.

B. Strainer/Filter Units: Basket Filter shall be pressure rated to 150 PSI (located downstream of the control valve).
1. For optimum filtration and system performance, the Basket Filter shall incorporate the following:
   a. Stainless steel screen element with a basket design to capture debris and prevent that debris from falling into the downstream line during routine maintenance.
   b. Screen element shall be reinforced with polypropylene ribs to increase durability and the screen element shall be color-coded for easy identification of mesh size.
   c. Screen mesh shall be a minimum of 150 mesh.
   d. Stainless Steel Screen Element
2. The Basket Filter and Stainless Steel Screen Element shall be manufactured by Rain Bird or approved equal.

C. Drip Emitters: Drip emitters shall be single outlet, pressure compensating, with ½" FIPT inlet with 20 Mesh Screen.
1. Check Valve: 4 psi internal spring
2. Emitter pressure range: 5 PSI minimum to 50 PSI maximum.
3. Flow ranges shall be 1 GPH and 2 GPH; a body with molded diffuser cap made from UV Inhibiting Engineering Grade plastics.
4. Emitter warranty (7) seven year warranty minimum.
5. Manufactured by Salco Products, Model #PST-CV-1 or PST-CV-2, or approved equal.

D. Drip Tubing: Flexible PVC Piping and Inline Drip Tubing.

E. Drip Header: PVC Pipe, PVC 1120, Schedule 40.

F. Other Devices: As specified and as indicated.

2.08 AUTOMATIC CONTROLS

A. Low voltage controller system, made for control of irrigation system automatic remote control valves. Controller operates on 120 volts AC building power system, provides 24 volts AC power to control valves, and includes stations for at least the number of control valves indicated. Must be compatible with specified central control system.

B. Control Enclosures (pedestals): Weatherproof enclosure with locking cover and two matching keys. Enclosure construction complies with NFPA 70 and NEMA 250, Type 4, and includes provisions for grounding.
   1. Material: Stainless steel, sheet metal.
   2. Pedestal Mounting Pad:
      a. The controller enclosure mounting pad assembly shall consist of a reinforced plastic support base, a three sixteenth inch thick 5052 H32 Marine Grade Aluminum mounting pad, and 304 grade stainless steel fastening brackets.
      b. Support base shall be installed and compacted in earth allowing the top two inches of the support base to be exposed above the earth.
      c. The 5052 H32 Marine Grade Aluminum mounting pad shall be clamped to the support based with the stainless steel fastening brackets.
      d. The controller enclosure shall be bolted from the inside of the enclosure to the mounting pad, thus preventing outside access to the mounting bolts.

C. Wiring: UL 493, solid copper conductor, insulator cable, suitable for direct burial
   1. Feeder Circuit Cables: Type UF, No. 12 AWG minimum, between building and controllers. Wire type and size as required by local codes and ordinances.
   2. Electrical Control Wire: AWG UF U1 approved minimum No. 14 gauge direct burial copper wire for all control wires, and minimum No.12 gauge direct burial copper wire for all common wires.
   3. Provide extra wires to valve groupings:
      a. Pull (2) two extra wires orange in color (to each individual valve grouping).
      b. Extend wires to designated valve grouping as noted on the irrigation drawings.
      c. Locate wires adjacent to mainline
   4. Remote control wire colors:
      a. Common wire white with a different color strip for each controller used.
      b. Drip emitter red wire.
      c. Bubblers to trees yellow wire.
      d. Lawn areas blue wire.
      e. Extra wires for valve groupings, orange wire.
   5. If multiple controllers are utilized, and wire paths of different controllers cross each other, both common and control wires from each controller shall be different colors approved by Owner's Representative.
   6. Control wire connections and splices shall be made with 3M direct bury splice #DBY or DBR, or similar dry splice method.
      a. All splices to be made in 10-inch round valve boxes.
      b. Locate spliced wiring on record drawings with dimensions.

D. Surge and Lightning Protection:
   1. Shall be Rain Bird MSP, or equal, with protection provided at the termination of each wire in the two-wire cable.
   2. 120 V Power protection shall be Intermatic AG2401 Lightning Arrestor, or equal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are ready to receive work.
   1. Match the drawings with proper dimensions and layout configurations
   2. Rough grades are at specified elevations
   3. Other trades have completed work in irrigation areas

4. Utilities schedules are in order to meet irrigation deadline

B. Verify location of existing utilities.

C. Verify that required utilities and services are available, in proper location and ready for use. If discrepancies exist notify the Owners Representative immediately, no more than 48-hours.

D. Obtain all necessary permits.

E. Prior to irrigation installation all landscape grades are to be established and approved by the Owner's Representative and Construction Inspector/Manager.

F. Beginning of installation means installer accepts existing conditions.

G. Receive approval of all required submittals prior to commencing work.

H. Verify existing water pressure and submit readings to the Owner's Representative prior to ordering booster pump equipment.

3.02 PREPARATION

A. Irrigation Drawings are drawn schematically. Follow as close as practical. All materials, equipment, etc. are to be located in landscape areas, contractor to provide accurate 'record drawings' verifying actual locations. Any discrepancies between site conditions and drawings are to be brought to the attention of the Owner's Representative and Construction Inspector/Manager. Route piping to avoid structures, trees and other plantings.

B. Prior to the installation of sleeves, review layout requirements with other affected Work. Coordinate locations of sleeves under paving to accommodate system. Install sleeving under asphalt paving and concrete walks, prior to concreting and paving operation, to accommodate piping and wiring. Other sleeve requirements:
1. Separate sleeves shall be installed for mainline, individual laterals, control wiring, and Central Control cable.
2. Compact backfill around sleeves to 95% Standard proctor Density within 2% of optimum moisture content in accordance with ASTM D1557.
3. Extend sleeves 12-inches into the planting areas past hardscape the edge.

C. Set stakes to identify proposed sprinkler locations, piping layout indicated is diagrammatic only. Rout piping to avoid plants, ground covers, and structures.
1. Obtain Owner's Representative and Construction Inspector/Manager approval before excavation.

3.03 TRENCHING

A. Trenching: Trench excavation shall follow, as much a possible, layout show on drawing. Dig trenches straight and support pipe continuously on bottom of trench. Trench bottom shall be clean and smooth with all rock and organic debris removed. Pressure supply line trenches shall be over-excavated as required to allow for bedding material. Trench depth shall be uniform as required to meet minimum depth requirement for type of piping.
1. Clearances:
    a. Piping 3-Inches and Larger- Make trenches of sufficient width (14-inches minimum) to properly assemble and position pipe in trench. Minimum clearance of piping 3-inches or larger shall be 5-inches horizontally on both sides of the trench.
    b. Piping Smaller than 3-Inches – Trenches shall have a minimum width of 7-inches.
    c. Line Clearance – Provide not less than 6-inches of clearance between each line, and not less than 12-inches of clearance between lines of other trades.
    d. Trench to accommodate grade changes.
2. Pipe and Wire Depth:

a. Pressure Supply Piping – 24-inches to 30-inches deep to top of pipe. Mainline depth shall not exceed 3'-0".
b. Non-pressure Piping (rotor and pop-up) – 15-inches to 18-inches deep to top of the pipe.
c. Control wiring – 24-inches to 30-inches deep to top of the wire.
d. Communications Cable – 24-inches to 30-inches deep to top of the cable.
e. Drip Tubing – 12-inches deep to top of pipe.
f. In-line Emitter Tubing – 6-inches deep to top of pipe (non-slope plantings. 4-inches deep to top of the pipe (slopes 2:1 or greater). On existing tree – 2-inches deep to top of pipe with soil staples to hold in place every 5 feet or less. Contractor to notify Owner's Representative and Construction Inspector/Manager before backfilling for inspection.

B. Trench to accommodate grade changes.

C. All piping is to be installed in an individual trench; no other piping is to be placed in this trench. Wiring can be in the same trench and should run on the side.

D. Mainline piping is to be installed in an individual trench; no other piping is to be placed in this trench. Wiring can be in the mainline trench and should run on the side of the pipe only.

E. Do not stack piping in same trench; piping shall have 12 inches minimum separation when side-by-side. Where pipes cross above or below another pipe, provide a minimum separation of 6 inches above and or below.

F. Backfilling: Do not begin backfilling operations until required system tests have been completed. Do not backfill when conditions are below 35-degrees Fahrenheit except with prior approval by Construction Inspector/Manager. Leave trenches slightly mounded to allow for settlement after backfilling is completed. Trenches shall be finished graded prior to walk-through of system by Owner's Representative.
1. All pressure supply lines shall be bedded with approved sand 4-inches below invert of pipe, to finish rough grade and width of trench.
2. Do not leave trenches open for a period of more than 48 hours. Open excavations shall be protected in accordance with OSHA regulations.
3. Compact backfill to 90% maximum density in 6-inch lifts, determined in accordance with ASTM D1557 utilizing the following methods:
a. First water settle, then mechanically tamp for maximum density.

G. Piping Under Paving or Hard Surface areas:
1. Provide for a minimum cover of 30-inches between the top of the pipe and the bottom of the aggregate base for all pressure and non-pressure piping installed under asphaltic concrete or concrete paving.
2. Piping shall be bedded with construction grade sand or squeegee – 6-inches below pipe to 6-inches above pipe and width of excavation.
3. Compact backfill material in 6-inch lifts at 95% maximum density determined in accordance with ASTM D1557 using manual or mechanical tamping devices.
4. Set in place, cap, and pressure test all piping under paving, in presence of Owner's Representative or Owner's representative prior to backfilling and paving operations.
5. Piping under existing walks or concrete pavement shall be done by jacking, boring, or hydraulic driving, but where cutting or breaking of walks and/or concrete is necessary, it shall be done and replaced at no cost to Owner's representative. Obtain permission and prior approval to cut or break walks and/or concrete from Owner's representative.

H. Do not backfill trenches until inspected by Construction Inspector/Manager.

3.04 INSTALLATION

A. Install pipe, valves, controls, and outlets in accordance with manufacturer's instructions and all applicable codes.

B. Water Supply is from an existing system irrigation mainline will be extended as shown as shown on irrigation plans.

C. Provide for thermal movement of components in system.

D. Controller; Hunter Pro-C 3-stations (exterior setup). If the existing controllers do not have open slots for the new drip valves install a new controller as noted.
   1. Provide 6-inch expansion coil at each valve to which controls are connected, and at 100 ft. intervals.
   2. Bury and tape the wire to the side of the pipe.
   3. Field splices to be placed in a 12" circular valve box and connected with 3M DBY or DBR connectors as per manufacturer's recommendations.
      a. All wire splice locations are to be approved by the Owners Representative prior to splice.
   4. Provide pump start wires for all controllers to the pump. Set time delay of 60 seconds or less.

E. After piping is installed but before sprinkler heads are installed and backfilling commences, open valves and flush system with full head of water.

F. PVC Piping:
   1. Snake pipe in trench as much as possible to allow for expansion and contraction, do not place mainline and lateral line in same trench. Place each line in a separate trench.
   2. When pipe installation is not in progress, or at end of each day, close pipe ends with tight plug or cap.
   3. Coordinate pressure supply line installation with required bedding operations.
   4. Stake all above grade PVC piping per details.
   5. Use 45º ells when making perpendicular crossing of above grade PVC piping, to depress bottom pipe.
   6. Lay pipe and make all plastic-to-plastic joints in accordance with manufacturer's recommendations.
   7. Install detectable marking tape 12-inches above all irrigation main lines.
   8. Flushing:
      a. The mainline and lateral lines after piping, risers and valves are in place and connected, but prior to installation of sprinkler heads and quick coupler assemblies, shall be thoroughly flushed under full head of water pressure until totally clean (15 minutes minimum).
      b. Additional flushing will be required if piping is damaged or changes have occurred to the mainline system.
   9. Solvent Welding shall be done in accordance to ASTM-2855. Refer to 2.02 materials for approved products for each type of piping.

G. Piping Inspection:
   1. The Architect retains the right to have the contractor remove up to five (5) different fittings or more for testing of proper solvent welding techniques at no additional cost to the Owner.

H. Threaded Fitting Requirements:
   1. All threaded fittings will use an approved threaded joint sealant.
   2. PTFE sealing tape shall meet FED.MIL SPEC A-A58092 and be installed per manufacturers' specifications and American Society for Testing and Materials (ASTM), F 1498.
   3. Do not over-tighten.
   4. Paste-type thread sealants shall be compatible with the particular plastic used. Materials: Spears 75™ thread sealant or approved equal.

I. Thrust Blocks: (if needed)
   1. Construct thrust blocks behind all gasketed fittings, tees, bends, reducers, and caps in accordance with pipe manufacturer's recommendations.
      a. Contact Owner's Representative prior to placing thrust blocks, for observation of thrust block excavation and initial placement.
      b. Pressure test pressure supply line with thrust blocks 48 hours after installing thrust blocks.
      c. Use thrust blocks for fittings on pipe greater than or equal to 3-inch diameter or any diameter rubber gasket pipe.
      d. Use 3,000-PSI concrete.
      e. Use No. 4 Rebar wrapped or painted with asphalt tar based mastic coating.

f. Do not cover the top and bottom of pipe joint with concrete. Soil is to be compacted 95% or greater.

2. Joint Restraint Harness:
   a. Use a joint restraint harness wherever joints are not positively restrained by flanged fittings, and/or threaded fittings.
   b. Use a joint restraint harness with transition fittings between metal and PVC pipe, where weak trench banks do not allow the use of thrust blocks, or where extra support is required to retain a fitting or joint.
   c. Use bolts, nuts, retaining clamps, all-thread, or other joint restraint harness materials, which are zinc plated or galvanized.
   d. Use on pipe greater than or equal to 3-inch diameter or any diameter rubber gasket pipe.
3. Thrust developed per 100-psi pressure (lbs. force) for various fitting configurations.

| Pipe Size | Fitting $90^{o}$ Elbow | Fitting $45^{o}$ Elbow | Valves, Tees Dead Ends |
|---|---|---|---|
| 3 | 1,000 | 600 | 800 |
| 4 | 1,800 | 1,100 | 1,300 |
| 6 | 4,000 | 2,300 | 2,900 |
| 8 | 7,200 | 4,100 | 5,100 |

Approximate bearing strength of typical soils:

| Soil Type | Lbs/Ft 2 |
|---|---|
| Mulch, Peat, etc. | 0 |
| Soft Clay | 500 |
| Sand | 1,000 |
| Sand and Gravel | 1,500 |
| Sand and Gravel with Clay | 2,000 |
| Sand and Gravel Cemented with Clay | 4,000 |
| Hard Pan | 5,000 |

J. Valve Boxes
1. Install one valve box for each type of valve per the detail drawings.
   a. Install Terra Bond Fabric around the outside of the valve box by taping. Extend fabric 12 inches beyond base of valve box backfill around the valve box and compact.
   b. Install gravel sump inside of valve box after compaction of all trenches. Place final portion of gravel inside valve box after valve box is backfilled and compacted.
2. Valve box colors; green in turf areas and tan in non-turf areas.
3. The top of valve box in turf areas shall be 3 inches to 4 inches below the finish soil grade.
4. Use extensions when depths of the equipment being covered are greater than the box.
5. All electric control valves shall be identified with 'Christy' I.D tag noting the controller I.D. and station number.
6. Brand all valve box lids. Letter and number size shall be no smaller than 1-inch and no greater in size than 1 ½-inches. Depth of branding shall be no more than 3/8-inches into valve box lid as follows:
   a. Control valves – Brand controller letter and station number on lid of each control valve box i.e. Controller 'A' valve station number 2 would read as "A - 2".
   b. Quick Coupling Valves – Brand quick coupling valve box lids with letters "Q.C.".
   c. Wire splices – Brand all wire splice box lids with letters "W.S.".
   d. Drip Tubing Blowout Stubs – Brand controller letter and station number on lid of each drip tubing blow out box lid.
   e. Isolation Gate Valves – Brand all isolation gate valve box lids with letters "G.V.".
   f. Air Release Valves – Brand all air release valve box lids with word "AIR".
   g. Brand all other irrigation boxes with letters as instructed by the owner's representative.
7. All vaults will have a minimum separation of 4 feet.
8. For model and sizing information see section 2.02 materials.
9. Valve boxes and vaults installed near asphalt or concrete surfaces shall be parallel and equal to the elevation of hard surface.

10. All valve boxes shall have Epic plastics valve box stabilizers or bricks under each corner of a rectangular valve box and minimum of three (3) under round valve boxes.

K. Control Wiring:
   1. Low Voltage Wiring:
      a. Bury control wiring between controller and electric valves in pressure supply line trenches, with wires consistently located to one side of pipe once the pipe has been placed on top of initial sand bedding.
      b. Separate wire trenches will not be allowed unless approved by Owner's Representative prior to installation.
      c. Bundle all 24 volt wires at 10-foot intervals with electrical or duct tape.
      d. Provide an expansion loop forming expansion loop by wrapping wire at least 8 times around a ¾-inch pipe and withdrawing pipe at for the following locations
         1) Pressure supply line angle fittings.
         2) Every electric control valve location (in valve box).
         3) At minimum, 50 feet intervals.
      e. Make splices and electric control valve Connections using 3M direct bury splice DBY or DBR; or similar dry splice method provide 8-inch expansions loops.
      f. Install control wire splices not occurring at control valve in a separate splice valve box.
      g. Install one control wire for each control valve.
      h. Run two (2) spare #14-1 control wires from controller pedestal(s) to last electric control valve operated by controller on each leg of pressure supply line.
         1) See irrigation drawings for valves to receive spare wires.
         2) Label spare wires at controller and wire stub box.
         3) Loop a minimum of 24-inches from all spare wires inside every control valve box operated by controller.
      i. Run all future control wires from controller pedestal to point indicated on drawings. Coil a minimum of ten (10) feet at termination and install in 10: round valve box. Label all wires at termination.
   2. High Voltage Wiring for Automatic Controller: Provide 120-volt power connection to automatic controller.

L. Sprinkler Heads:
   1. All irrigation heads are to be field adjusted to accommodate the new sidewalk and curbing changes. This will require cutting and splicing of lateral lines and boring under sidewalks where needed. Depth of boring are to match the depth of the piping per the details and specifications.
   2. Irrigation spray heads are to be adjusted to prevent water overspray where the grass is reduced and concrete mow curbs are installed. Where spacing problems arise it is the responsibility of the contractor to coordinate adjustments with the Owner's Representative prior to the installation of the sprinkler heads. Valve locations and wiring are to be field located. The valves shown on the drawings have been field verified and are in the approximate area. Additional valves may exist in areas not shown and some valve may not exist where shown.
   3. Install sprinkler heads where designated on drawings or as directed in field notes to field adjust spray heads and rotors to provide proper coverage.. Spacing of heads shall not exceed the maximum indicated on Drawings unless re-staked as directed by Owner's Representative. In no case shall the spacing exceed maximum recommended by manufacturer.
   4. Set plumb to finish grade as detailed. Install heads on double swing-joint risers of schedule as detailed. Angled nipple relative to non-pressure line shall be no more than 45 degrees or less than 10 degrees. Adjust heads to correct height after sod is installed.
   5. Adjust part circle heads for proper coverage. Plant placement shall not interfere with intended sprinkler head coverage, piping, or other equipment. Owner's Representative may request nozzle changes or adjustments without additional cost to the Owner.
   6. Spray head placement:
      a. For small grass areas place perimeter heads 2-inches from curbs, sidewalks, or walls.
   7. Set lawn sprinkler heads ½-inch above finish grade elevations. After the sod (grass) has been paced adjust heads to proper sprinkler elevations.

8. After piping is installed but before sprinkler heads are installed and backfilling commences, open valves and flush system with full head of water.

M. Drip emitter irrigation with cap threads

N. Piping PVC with threaded emitters, emitters are to be placed ½-inch above grade when 3/8-inch minus rock material is used. Other crushed rock sizes adjust emitter elevation for minimal visibility; submit for Owner's Representative approval.
   1. Solvent welding IPS flexible PVC pipe to rigid PVC pipe use the following:
      a. IPS 795 cement with IPS P70 primmer.
      b. PVC male adapter are to be used on both ends of piping when connection to lateral ties or emitters.
      c. PVC male adapter connecting to emitter shall be black or matching color of the emitter.
   2. Manual flushing valves shall be installed at the end of each drip irrigation lateral.

O. Drip irrigation piping :
   1. Install fitting connections per manufacturer's recommendations.
   2. Manual flushing valves shall be installed at the end of each section of piping.
      a. Approval required by Owner's Representative prior to burial.

P. Automatic Control System installation (if a new controller is needed)
   1. Install controllers according to manufacturer's written instructions and as indicated.
   2. Ground all controllers according to the American Society of Irrigation Consultants grounding guidelines (http://asic.org/asic_grounding_guideline.htm) and the details on the drawings. All grounds shall meet NEC Code.

3.05 FIELD QUALITY CONTROL

A. Testing - Conduct tests in presence of Owner's Representative. Arrange for presence of Owner's Representative 48 hours in advance of testing. Pressure test is to be conducted prior to backfilling trench.
   1. Pressurize the mainline to 40 PSI over the designated static pressure or 120 PSI, for a period of 2 hours, whichever is higher.
   2. Leakage, Pressure Loss - Test is acceptable if no leakage or loss of pressure is evident during test period.
   3. Leaks - Detect and repair leaks.
   4. Retest system until test pressure can be maintained for duration of tests.
   5. Before final acceptance, pressure supply line shall remain under pressure for a period of 48 hours.
   6. Subsections of pressure piping may be tested independently, subject to review of Construction Inspector/Manager. However, a final pressure test must be conducted when the entire system is in place.
   7. After the main line pressure test is passed, if any comprise in the irrigation main line, the contractor will then have to re-test any section(s) that was comprised.

3.06 ADJUSTING

A. ADJUSTING - Upon completion of installation, on a weekly basis, "fine-tune" entire system by performing the following:
   1. Regulating valves
   2. Flush and adjust all sprinkler heads for optimum performance
   3. Prevent over spray onto walks, roadways, and buildings.
   4. Provide written report of each week findings and submit to Owner's Representative. (refer to section 32 01 90 for form)
   5. System is to be flushed one week prior to acceptance by the owner. Each valve is to be opened and the last head or emitter is to be removed on each line until clean.
   6. Emitter spacing is to be equal around the planting.

B. If it is determined that irrigation adjustments will provide proper and more adequate coverage, make such adjustments prior to Final Acceptance, as directed, at no additional cost to Owner. Adjustments may also

include changes in nozzle sizes, degrees of arc, and control valve throttling. Changes should coordinate with water audit.

C. All sprinkler heads shall be set perpendicular to finish grade unless otherwise designated.

D. After installations of crushed rock adjust emitters so the emitter is buried into the crushed rock. The top 1/2-inch is to be exposed above crushed rock.

3.07 DEMONSTRATION

A. Demonstrate to the Owner's Representative, that the system meets coverage requirements, the automatic controls function properly, operation of equipment, sprinklers specialties, and accessories Review operating and maintenance information. Provide 7 days written notice in advance of demonstration.

3.08 WARRANTY

A. Provide prime quality materials matching the originally installed equipment.

B. Warrant irrigation materials, equipment, and workmanship against defects for a period of one (1) year from date of substantial completion. Warrant the irrigation pump station for 24 months from date of authorized start-up.
   1. Fill and repair depressions.
   2. Restore landscape or structural features damaged by settlement of irrigation trenches or excavations.
   3. Repair damage to premises caused by defective components.
   4. Make repairs within 24 hours of notification from Owner's Representative. If no response is made to the requested repair, the contractor(s) will be back-charged for costs that occur.
   5. Any work performed on the irrigation system during the warranty period is to be extended with a full year warranty

C. The Contract Documents govern replacement materials, labor, and workmanship identically as with new work. Make replacements at no additional cost to owner.
   1. The warranty applies to originally installed materials and equipment and replacements made during the warranty period.
   2. Expenses due to vandalism, before substantial completion and during the maintenance period, shall be borne by Contractor.
   3. "Act of God" may become an acceptable reason for a warranty to be void. However, the contractor must make every reasonable attempt to prevent potential damage. "Act of God" damage shall be limited to unseasonable freeze, winds above 60 M.P.H., and flooding from excessive rain.

D. Contractor shall accommodate operation on irrigation system as to not conflict with Jones Gardens Office hours and use of turf areas or other areas.

END OF SECTION

**SECTION 32 91 19**

**LANDSCAPE GRADING**

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Sub-grades are to be completed by the grading contractor which includes grading and importing of sub-grade materials.

B. Review of rough grades that impact irrigation, landscape plants and landscape turf (sod).

C. Topsoil for finishing landscaping to be completed by the landscape contractor.

D. Place, level, and compact topsoil.

1.2 RELATED SECTIONS

A. Section 32 84 00 – Irrigation

B. Section 32 92 23 – Sodding

C. Section 32 93 00 – Landscape

1.3 Definitions:

A. Sub-grade: Soil areas that are to be graded to the level required for landscape finish grades and or areas that require cut and fill and excavation for landscape fill materials.

B. Sub-Soil: Layer of “fill material” between the “sub-grade” and the “imported topsoil”.

C. Fill Material: Soil materials used to raise existing grades using “sub-soil” and ‘imported topsoil’ and approved soils as directed by the Landscape Architect. This soil types generally consist of approved “native soils” or approved imported soils.

D. Imported Topsoil: Layer of soil placed above sub-soil or sub-grade. Soil used for specific planters with soil amendments as specified in Part – 3 of this specification.

E. Native soil: Approved soils used for approved planting mixes or as ‘fill material’

F. Landscape Area: Areas programmed for turf and plants and soil types specified for such plantings. Or all areas not programmed for concrete, building, asphalt or other similar surfaces.

G. Planter: landscape areas not programmed for turf.

1.4 PROTECTION

A. Protect landscaping and other features remaining as final work.

B. Protect existing structures, fences, roads, sidewalks, paving, and curbs.

1.5 SUBMITTALS

A. Submit fill material samples under provisions of Section 01 33 00.

B. Submit 5-gallon container of the 1-inch minus fill for use within the landscape areas. Provide test results for clay content and sieve analysis. Submit horticultural testing per Section 32 91 19 Landscape Grading, 2.2 USING EXISTING SOIL MATERIALS if existing site soil will be used.

C. Topsoil submittals:
   1. Submit five-pound random composite sample of imported topsoil for every one hundred cubic yards of fill to testing laboratory, in clean containers for sieve analysis.
   2. Verification will be mandated to prove that the material on-site is the same as the material used for the soil test presented and approved with the submittal package
   3. Agronomy testing:
      a. Agronomy tests requirements:
         1) Testing to be performed by an independent testing laboratory.
         2) Provide complete agronomy testing and fertilizer recommendation.
         3) Tests shall have been conducted within six (6) months of receipt by the owner's representative unless noted.
      b. Required submittals of agronomy testing results:
         1) First submittal: prior to any landscape, grading or irrigation work is performed.
            a) Test shall have been conducted within six (6) months of receipt by the owner's representative unless noted.
         2) Second submittal: No more than two weeks after first delivery of topsoil to the site.
            a) Sample shall be taken from topsoil that is delivered to the site.
            b) The owner's representative shall be present to witness and approve the sample selected.

D. Submit a (2) two pound random composite of "Soils Plus" soil amendment. Soil amendment samples are not to be mixed with soil or other products for the submittal.

E. Submit list of equipment and procedures for grading landscape areas. All finish grades in grass areas shall be laser graded.

F. Submit delivery tags or receipts for the following:
   1. "Soils Plus" (soil amendment)
   2. Imported topsoil
   3. Grow Power-Plus
   4. Pre-emergent
   5. All Fertilizers and Herbicides

1.6 QUALITY ASSURANCE

A. Subcontractor license requirements are as noted in Section 32 93 00, 1.7 Quality Assurance, under Installer.

PART 2 PRODUCTS

2.1 IMPORTED TOPSOIL

A. Provide new imported topsoil: submit a five-pound composite sample to an independent testing lab for a complete agronomy test and fertilizer and amendment application recommendations. Provide an additional agronomy test of the on-site soil, complete with amendment recommendations. All soil used for planting, must meet the following requirements:
   1. Loamy soil that allows drainage.
   2. Free from concrete, asphalt, type II refuse, roots, heavy clay, stones larger that one-sixteenth (1/16) inch in largest direction, gravel, sticks, brush, litter and other deleterious substances.
   3. Clay content percentage between ten to twelve percent with the sand content between 70 to 75 percent.
   4. Salinity – Ece no greater than four mmhos/cm.
   5. Boron – Less than one ppm.
   6. pH – Less than 8.5

7. Percolation rate – greater than 2-inches per hour.

B. Topsoil sieve standards:

PERCENT PASSING U.S. STANDARDS SIEVE

C. Approved suppliers:
1. Impact Sand and Gravel – “Clean Washed Sand” Phone (702) 407-0951.
2. Vista Landscape Center – “Silt (Washed) Phone: (702) 565-6611.
3. Approved equal. Written approval by the owner’s representative are required. Submit soil report and sample with submittal review for the substitution approval process. The approval process shall not constitute just reason for delay of the project.

2.2 SUBGRADE FILL USING EXISTING OR IMPORT SOIL MATERIALS

A. Soil Standards for sub-grade fill/soil under the required topsoil for planting beds and grass areas which includes all areas considered for landscape.
1. Such material shall be free from refuse, roots, heavy clays, stones larger that 1-inch in largest direction, gravel, type-II (or similar), asphalt, crushed concrete or concrete by-products, glass, sticks, brush, litter and other deleterious substances etc..
2. Clay content shall be less than 20% to 30%
3. Less than 10% gravel (aggregate) content. 90% shall pass a #4 sieve.
4. All soils that are used for fill or used as a sub-soil shall meet the requirements listed above (2.2, A., 1.).
5. All soils (materials) used for fill are to be submitted for approval prior to using in any landscape sub-grade.
6. Soils that are in question shall meet the sieve analysis and a horticulture test. The horticulture test shall be performed by a certified ‘Agricultural Laboratory’.
    a. Attn: Mike Butterss, A & L Western Agricultural Laboratories, 1311 Woodland Avenue, Suite #1, Modesto, CA 95351. Phone: 209-529-4080.

B. Sub-grade Soil Test Requirements:
1. A minimum of three samples are required.
2. Organic matter
    a. Percentage of organic matter (all material must have a percentage of organic matter).
3. Nutrient reading listing parts per million.
    a. Nitrogen (NO3N) ppm
    b. Phosphorus Weak Bray ppm
    c. Phosphorus (NaHCO3P) ppm
    d. Potassium (K) ppm
    e. Magnesium (Mg) ppm
    f. Calcium (Ca) ppm
    g. Sodium (Na) ppm
    h. Sulfur (SO4S) ppm
    i. Zinc (Zn) ppm
    j. Manganese (Mn) ppm
    k. Iron (Fe) ppm
    l. Copper (Cu) ppm
    m. Boron (B) ppm
4. Cation Saturation Percentage (computed)
    a. Potassium (K %)
    b. Magnesium (Mg %)
    c. Calcium (Ca %)
    d. Sodium (Na %)
5. Lime Reading
6. Soil ph reading
7. Water Percolation Rate

2.3 ORGANIC MATERIAL

A. Soil amendment, shredded, loose, organic mulch; free of lumps, roots, inorganic material or acidic materials.
   1. "Soils Plus" supplier: Impact Sand and Gravel – Phone: (702) 407-0951.

B. Organic Fertilizer, "Gro-Power Plus"

C. Soil sulphur, Hi-Yield or equal.

D. Compost used, as soil additives, shall meet the following specifications:
   1. Mixing rates are to be a minimum four yards per 1,000 square foot.
   2. Gradation: a minimum 95% of material by weight, shall pass a ¼" screen.
   3. Organic content: minimum 40% based on dry weight as determined by ash method.
   4. Carbon to nitrogen ratio: maximum 15 15:1.
   5. pH: 6.0-8.0 as determined in saturated paste.
   6. Conductivity of saturated extract shall not exceed 4 ds/m.
   7. Soluble sodium in saturation extract shall not exceed 15 meg/l.
   8. Moisture content: 30-45% at time of shipment.
   9. Heavy metals: shall meet EPA part 503 exceptional quality concentration limits as listed below:
      a. Arsenic less than 41 mg/kg
      b. Copper less than 1500 mg/kg
      c. Mercury less than 17 mg/kg
      d. Selenium less than 100 mg/kg
      e. Cadmium less than 39 mg/kg
      f. Lead less than 300 mg/kg
      g. Nickel less than 420 mg/kg
      h. Zinc less than 2800 mg/kg
   10. Contaminants: finished compost shall be free of contaminants both visible and non-visible.
   11. Maturity: finished characteristic suggestive of maturity include:
      a. Color: dark brown to black
      b. Odor:
         1) acceptable = none, soil-like, musty or moldy
         2) Unacceptable = sour, ammonia, or putrid
   12. Agricultural soil analysis of product must be current (within 3 months of bid date).
   13. Biological Content:
      a. Total Bacterial Biomass: Meets minimum of desired range (150-300+)
      b. Total Fungal Biomass: Meets minimum of desired range (150-200+)
      c. Must not contain root-feeding nematodes

PART 3 EXECUTION

3.1 INSPECTION

A. Verify site conditions and note irregularities affecting work of this Section. All sub-base soils installations should have been coordinated and reviewed for acceptance prior to the topsoil installation.

B. Beginning work of this Section means acceptance of existing conditions.

3.2 LANDSCAPE SUBGRADE PREPARATION

A. Subgrade filling shall be performed by the landscape contractor. It is the responsibility of both the landscape contractor and general contractor to coordinate subgrade filling per the requirements of this section.

B. Eliminate uneven areas and low spots. Remove debris, roots, branches, and stones, in excess of 1-inch in size. Remove all soils contaminated with petroleum products and other harmful products.

C. All rough grades and finish grades are to be reviewed and approved by the Owner's Representative prior to planting.
   1. Remove all rocks one-inch and larger after rough grading is completed. Note that all planting areas shall be free of rocks 1-inch and larger.

D. For additional cut and over excavation requirements see section 31 00 00 Earthwork.

3.3 LANDSCAPE FILLING

A. For further amendment requirements see sections 32 92 23 and 32 93 00 and planting detail drawings.

B. Coordinate cut and fill with civil drawings and specifications and related trades to avoid confusion with responsibilities.

C. Rough grades for planting beds:

   a. Areas planned for 3/8" minus shall be 3 inches below all hardscape surfaces. (prior to crushed rock installation)
   b. Areas planned for 4" to 8" rip rap shall be 6" below all hardscape surfaces. (prior to crushed rock installation)
   2. Grass Areas: 1-inch below the concrete edge. Confirm with the Owner's Representative on all grade issues.

3.4 PLACING TOPSOIL

A. Scarify the sub-grade to depth of 5-inches where turf is scheduled. The scarification (cross ripping) of the top grade should be in at least two different directions. Provide additional scarifications in areas where equipment is used for hauling and spreading topsoil has compacted subsoil. Provide a semi finish grade prior to application of topsoils and obtain approval from the Owner's Representative. Remove all rocks one inch and larger after scarifying is completed.

B. Use fill in relatively dry state. Place imported topsoil during dry weather. Laser equipment is to be used for obtaining the finish grades (Grade with 10 feet – 12 feet wide blades).

C. Remove stone, roots, grass, weeds, debris, and foreign material while spreading.

D. Remove surplus subsoil and other soils from site.

E. Leave stockpile area and site clean and raked, ready to receive landscaping.

F. All grass areas are to be graded with laser grader technology.

G. All landscape grades are to be approved by the Owner's Representative prior to planting or grass installation.

H. Required amendments for topsoil:
   1. Agriculture soil sulfur. 50 lbs per 1,000 square feet
   2. "Soils Plus", 3/8" minus, organic nitrogenized mulch. 5-cubic yards per 1,000 square feet
   3. Gro-Power Plus. 150 lbs. per 1,000 square feet.

3.5 COMPACTION FOR LANDSCAPE AREAS

A. Planter Landscape Areas (planting and turf (sod) – 85% to 90% compaction of the relative moisture density curve may be used for the upper 2 feet of sub-grade soil in planter landscape areas. Planter landscape areas in the building pad envelope may utilize a compaction of 85% for the top upper 1 foot only. The mixed soils will are to be at 95% compaction of the relative moisture density curve for both areas.

B. Planters within the building envelope – place 12-inch layer of mixed import soil and thoroughly water settle prior to applying next 12-inch layer of soil. Continue the same procedure until soil is compacted at the 85% to 90% compaction rate.

C. Landscape Infield Areas – 95% compaction of the relative moisture density curve for all fill soil up to 2 feet below final sub-grade. The remaining soil may then be compacted to 90% of the relative moisture density curve.

D. Landscape turf (sod) – 85% to 90% compaction of the relative moisture density curve may be used for the imported topsoil.

3.6 TOLERANCE

A. Top of fill: Plus or minus ½ inch in 10 feet.

END OF SECTION

**SECTION 32 92 23**

**SODDING**

PART 1 GENERAL

1.1 REFERENCES

A. TPI (Turfgrass Producers International) - Guideline Specifications to Sodding.

B. ASPA (American Sod Producers Association) - Guideline Specifications to Sodding.

C. FS O-F-241 Fertilizers, Mixed, Commercial.

1.2 RELATED SECTIONS

A. Section 31 22 13 - Rough Grading

B. Section 31 23 16 - Excavation

C. Section 31 23 33 – Backfilling

D. Section 32 84 00 – Irrigation

E. Section 32 93 00 – Landscape

F. Section 32 01 90 – Maintenance

1.3 QUALITY ASSURANCE

A. Sod Producer: Company specializing in sod production and harvesting with minimum five years experience, and certified by the State of Nevada

B. Installer: Company approved by the sod producer.

C. Sod: Minimum age of 18-months, with root development that will support its own weight, without tearing, when suspended vertically by holding the upper two corners.

D. Submit sod certification for grass species and location of sod source.

1.4 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.5 SUBMITTALS

A. Submit sod certification on supplier letterhead stating species and cultivar.

B. Submit current soil analysis of sod base material to the owner's representative. Analysis shall be from an independent testing lab. Include the following information in the analysis:
   1. Percentages of silt, sand and clay.
   2. Nitrogen (NO3N) ppm
   3. Phosphorus Weak Bray ppm
   4. Phosphorus (NaHCO3P) ppm
   5. Potassium (K) ppm
   6. Magnesium (Mg) ppm
   7. Calcium (Ca) ppm
   8. Sodium (Na) ppm

9. Sulfur (SO4S) ppm
10. Zinc (Zn) ppm
11. Manganese (Mn) ppm
12. Iron (Fe) ppm
13. Copper (Cu) ppm
14. Boron (B) ppm
15. Cation Saturation Percentage (computed)
    a. Potassium (K %)
    b. Magnesium (Mg %)
    c. Calcium (Ca %)
    d. Sodium (Na %)
16. Lime Reading
17. Soil ph reading
18. Water Percolation Rate

C. Submit a fertilization log for turf. Include dates, quantities and receipts showing specific product.

1.6 OPERATION AND MAINTENANCE DATA

A. Under the provisions of section 01 33 00 include maintenance instructions, cutting method and maximum grass height; and types, application frequency, and recommend coverage of fertilizer.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver sod on pallets. Protect exposed roots from dehydration.

B. Sod shall be harvested from the supplier within 24 hours of delivery.

C. Do not deliver more sod than can be laid within 24 hours.

1.8 MAINTENANCE SERVICE

A. Maintain installed sod for the duration of the 120 day minimum maintenance period as directed by the owner's representative. See section 32 01 90 Landscape maintenance.

B. See maintenance specification section 32 01 90 and section 32 92 23 part 3.4 Maintenance for full requirements.

1.9 EXTRA MATERIALS

A. Provide the following extra components under provisions of Section 01 33 00.
1. 100 lbs. NPK fertilizer.
2. 50 lbs. "Gro-Power Plus"
3. 100 lbs. Iron fertilizer

PART 2 PRODUCTS

2.1 MATERIALS

A. Landscape Turf (Grass Sod): Hybrid Bermuda Grass

B. Approved sod suppliers:
1. West Coast Turf 888-893-8873
2. Valley Sod Farms 888-925-6875

C. Sod supplier requirements for grass and pad:
1. Provide strongly rooted sod in sand base free of stones with vigorous growth and development when planted (viable not dormant).

2. Grass with bare spots, weeds and undesirable native grasses will be rejected
3. Root growth to have a minimum of 18-months.
4. Machine cut to pad thickness of ¾-inch, plus or minus ¼-inch thickness excludes top growth and thatch.
5. Sod pads to be uniformed in size with maximum of 5-percent deviation in either length or width. Broken and uneven pads will be rejected.
6. Pads incapable of supporting its own weight when suspended vertically with a firm grasp on upper 10-precent of pad will be rejected.
7. Sod shall not be grown with a nylon mess backing. Any sod installed with nylon mess will be rejected.
8. Nylon mess used to secure the large rolls must be removed during installation. Any sod installed with nylon mess backing will be rejected.

D. Fertilizer: NPK 15-15-15. Triple pro or equal.

E. Soils: See Landscape Grading specification 32 91 19.

F. Soils Amendments: Amended material, shredded, loose, organic mulch; free of lumps, roots, inorganic material or acidic materials. See section 32 91 19 Landscape Grading.

G. Water: Clean, fresh, and free of substances or matter, which could inhibit vigorous growth of grass.

PART 3 EXECUTION

3.1 INSPECTION

1. Prior to installation of sod, the contractor shall obtain written approval from the owner's representative.
2. Finish grade

B. Beginning of installation means acceptance of existing site conditions

3.2 SOIL AMENDMENTS AND FERTILIZING

A. Provide amended topsoil per the requirements of section 32 91 19 Landscape grading.

B. All fertilizers shall be approved prior to application.

C. Apply fertilizer after smooth raking of topsoil and prior to installation of sod.
1. Application ratio: (5) pounds of NPK-15-15-15 per 1000 square feet.
2. Mix thoroughly into upper 1-inch of topsoil.
3. Lightly water to aid the dissipation of fertilizer.
4. No more than 48 hours prior to installing sod.

D. Apply an additional fertilizer application, (10) pounds of NPK-15-15-15 per 1000 square feet, within 24 hours of installing sod.

E. For additional fertilizer requirements see section 32 01 90 Maintenance, 3.4, 5.

3.3 LAYING SOD

A. Moisten prepared surface immediately prior to laying sod.

B. Lay sod immediately on delivery to site to prevent deterioration. All delivered sod shall be installed within 24 hours of delivery.

C. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12-inches (300 mm) minimum. Do not stretch or overlap sod pieces.

D. Elevation of sod:
1. Lay smooth. Place top elevation of sod 1" below adjoining edging curbs.

E. On slopes lay sod perpendicular to slope/parallel to contours.

F. Water grass areas immediately after sod installation. Saturate grass areas to 3-inches to 4-inches into soil.

G. Sod is to be rolled within 7 days after installation.

3.4 MAINTENANCE

A. Maintain landscape areas from the time of installation through the completion of the maintenance period.

B. Mow grass once each week or more as directed by the owner's representative.
1. Maintain fescue, rye, and blended species at a maximum of 2 ½-inches mowing height.
2. Neatly trim edges and hand clip where necessary.
3. Immediately remove clippings after mowing and trimming.
4. All mowing, edging, and clean up work in any specific area shall be accomplished in a timely manner.

C. Water appropriately to prevent grass and soil from drying out or oversaturation.

D. Add additional topsoil mixed with soil amendments to remove minor depressions or irregular ties.

E. Control growth of weeds.
1. Submit "right to know" forms to the Jones Gardens Apartment Office at least (14) days prior to chemical applications.
2. Apply herbicides in accordance with manufacturer's instructions.
3. Remedy damage resulting from improper use of herbicides.

F. Immediately replace sod areas which show deterioration or bare spots with sod matching species and cultivar.

G. Protect sodded areas with warning signs during maintenance period. Do not allow foot traffic or motorized vehicles on to the sod for a minimum period of 2-weeks. Once the sod has properly rooted and accepted by the owners representative, remove signage.

H. Apply fertilizer per section 32 92 23 paragraph 3.2.

I. Review irrigation daily: adjust spray pattern nozzle types, clean clogged irrigation nozzles/heads. Adjust watering times for correct season, weather and other conditions as determined by soil probes.

J. For additional maintenance requirements see section 32 01 90 Landscape Maintenance.

END OF SECTION

**SECTION 32 93 00**

**LANDSCAPE**

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

A. Preparation of subsoil and topsoil.

B. Topsoil bedding.

C. Trees, plants, and ground cover.

D. Mulch and fertilizer.

E. Maintenance.

### 1.2 REFERENCES, STANDARDS AND COORDINATION

A. *American Nursery* & Landscape Association (ANLA) *American Standard for Nursery Stock* (USA); Edition approved 1985 by American National Standards Institute, Inc. (ANSI - Z60.1)--plant materials.

B. *Hortus Third*, 1976; Cornell University--plant nomenclature.

C. Arizona Nursery Association Recommended Tree Specification 1989 Standards.

D. Federal Specifications O-F-241 - Fertilizers, Mixed, Commercial.

E. ASTM D 1777 - Geotextile Fabric.

F. ASTM D 1682 - Geotextile Fabric.

G. ASTM D 751 - Geotextile Fabric.

### 1.3 DEFINITIONS

A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, Brome Grass, Puncture Vine and Salt Cedar (Tamarisk).

B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1 and *Hortus Third*.

C. Tree: Plant denoted on the plant schedule as ‘tree’ or ‘palm’. See to planting plan.

D. Shrub: Plant denoted on the plant schedule as ‘shrub’, ‘groundcover’, ‘accent’ or ‘cactus’. See planting plan.

E. Landscape areas: All areas scheduled for turf, tree and shrub planting.

F. Planters: All landscape areas not scheduled for turf.

G. Building envelope: Area within the boundary constituted by the outermost corners of all buildings. Including, but not limited to areas between buildings.

H. Planters at grade: Planters that reside at or within 2-inches of the adjacent walks, curbs, finish floor, or finish grade elevations.

I. Raised planters: Planters that retain soil in excess of 2-inches of soil.

1.4 OPERATION AND MAINTENANCE DATA

A. Submit instructions for continuing Owner maintenance under provisions of Section 01 77 00.

1.5 PERFORMANCE

A. Provide the labor, materials, equipment, plant, services and transportation, and perform the operations in connection with the construction and installation of the work. Work shall be as herein specified and as denoted on the accompanying drawings.

B. Refer to section 1.7 submittals for Landscape contractor prior experience requirements.

1.6 QUALITY ASSURANCE

A. The Owner's Representative reserves the right to inspect plant materials at the nursery or growing ground prior to loading and transporting and/or by photographs. Tag all trees and representative samples of shrubs and ground cover prior to the inspection. Arrange with the Owner's Representative ten (10) days in advance for the inspection. Such approval shall not impair the right of inspection and rejection during progress of the work.

B. Comply with federal, state and local laws requiring inspection for plant disease and infestations. Inspection certificates required by state law shall accompany each shipment of plants and deliver certificates to the Owner. Inspections are to be performed in the state of origin.

C. Transport plant materials in enclosed or tarp covered vehicles to minimize damage from wind and sun. Contractor is to carefully inspect all plants at the time of off-loading.
1. Check all plants for proper caliper, height, shape and balanced branching. Reject plants that fail the noted requirements.
2. Damaged plants are to be rejected.
3. Incorrect species and varieties are to be rejected.
4. Water immediately and protect as needed from wind and heat and other harmful conditions.

D. Substitutions of plant materials will not be permitted unless authorized in writing by Owner's Representative.
1. Requests for substitutions shall include a list of suppliers that have been contacted and shall include the date of contact.
2. If proof is submitted that specified plant is not obtainable, a proposal will be considered for use of the nearest equivalent size or variety with corresponding adjustment of Contract Price.

E. Personnel: Employ only qualified personnel familiar with required work.

F. Nursery: Company specializing in growing and cultivating the plants specified in this Section with minimum three years documented experience.

G. Installer: Nevada Licensed Contractor with a current "C-10 license". The subcontractor who holds a classification C-10 license may:
1. Grade and prepare plots of land for architectural horticulture.
2. Decoratively treat, arrange, plant and maintain gardens, lawns, shrubs, vines, bushes, trees and other vegetation.
3. Construct systems of drainage and landscape irrigation.
4. Install rocks, crushed rock and soils for desert landscaping.

H. Landscape contractor prior experience requirements:

1. All landscape contractors that bid the landscape portion of this project must submit to the Architect for approval, their proven abilities to perform the work required as in the specifications and drawing.The installing contractor shall have a minimum of seven (7) years experience with similar project size and cost.similar in material, size, and extent to work indicated and having a successful record of service performance. Documented work must be in the desert southwest.
2. The contractor must provide the following information to be approved as a qualified bidder. All references must have current addresses and phone numbers.
    a. Proven ability to manage and schedule the landscape planting, irrigation work, and related work that impacts the landscape completion date.
    b. Proven ability to complete the work on time and within budget.
    c. Proven ability to schedule and obtain the specified plant types and sizes during all seasons.
    d. Proven ability to follow and understand the drawings and specifications.
    e. Proven ability to complete the punch list work in the required time period.
    f. Proven ability to provide proper maintenance and care of the project prior to the substantial completion date and during the maintenance period.
    g. Proven ability to submit the required paper work and reports during the maintenance period.

1.7 SUBMITTALS

A. Plant and material Certifications:
1. Certificates of inspection required by governmental authorities.
2. Label data substantiating the plants, trees, shrubs, and planting materials comply with specified requirements.
3. Manufacturer's or vendor's certified analysis for soil amendments and fertilizer materials.
4. All plants are to have a Certificate of Origin and tags of specified species.
5. Submit certification from grower stating palms are free from insect's fungus/insects/borers or vascular infections.

B. Soil, Organic Amendments and Crushed Rock Submittals
1. Soil test and sample for all soil types
2. Organic amendments submit, test/reports and samples
3. Crushed rock submit test/reports and samples

C. Submit within (60) sixty days after Notice to Proceed, a completed list of materials to be furnished and source noting tree trunk caliper sized for each tree under this Section. Owner's Representative reserves the right to approve or reject materials, suppliers and subcontractors.

D. Topsoil
1. Refer to section 32 91 19 Grading for submittal requirements.

E. Submit copies of all invoices or receipts for materials used on the project that cannot be visually verified. These include, but are not limited to, backfill mix material, fertilizer tablets, composts, seed, soil stabilizers, water holding agents, herbicides, etc. All invoices or receipts must list the item, quantity, job location, date, and the supplier. Submit as items are delivered to the site. Substantial completion will not be given without all receipts being submitted.

F. Installer Qualifications: Submit the following certificates, licenses, or other legal documents to substantiate company experience.
1. Date and location company established.
2. Copy of C-10 license.
3. Two completed projects of equal size and scope in the desert southwest with a current contact name and phone number.

G. Planting Schedule: Proposed planting schedule, indicating dates for each type of landscape work during normal seasons for such work in area of site. Correlate with specified maintenance periods to provide maintenance from date of substantial completion. Once accepted, revise dates only as approved in writing after documentation of reasons for delays.

H. Submit instructions to the Architect for continuing maintenance under provisions of Sections 01 33 00.

I. Submit all records of existing weed eradications to the Architect. Include date of action and method of eradication including any chemical means.

J. Submit all “Right to Know” forms (14) days before the application of pesticides, herbicides, fertilizer, and etc.

1.8 REGULATORY REQUIREMENTS

A. Comply with regulatory requirements for fertilizer and herbicide composition.

B. Comply with regulatory requirements set forth by Clark County Department of Air Quality and Environmental Management (DAQEM) regarding the planting of Olive trees when specified for use.
   1. Exempt trees in inventory at retail outlets and those being delivered to landscaping projects, must include a label/tag approved by the DAQEM Control Officer documenting the exempt status, and date of approval of the “Certificate of Exemption” until sale to the consumer
   2. Copies of all invoices must be maintained in a separate binder at the Nursery business office, and made available to the DAQEM staff upon request. Verification of deliveries should also be made available by phone or facsimile.
   3. Trees shall meet the following criteria:
      a. Trees shall be accompanied by the original “Exempt Status” Nursery invoices; the tag number must match those listed on the invoice.
   4. Any person who violates any provision of these Regulations, including, but not limited to, any application requirements; any permit condition; any fee or filing requirement; any duty to allow or carry out inspection, entry or monitoring activities or any requirements by the Department of Air Quality and Environmental Management is guilty of a civil offense and shall pay civil penalty levied by the Air Pollution Control Hearing Board and/or Hearing Officer not more than $10,000. Each day of violation constitutes a separate offense.
   5. For any additional informational request or questions on “exempt status” olive tree qualifications, please contact the DAQEM at (702) 455-5942 between the hours of 8 a.m. to 4:00 p.m., Monday through Friday.

C. The types of herbicides to be used and the methods of application shall confirm with the Environmental Protection Agency Policies.

1.9 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Preparation:
   1. Spray evergreen plants and deciduous plants in full leaf with anti-desiccant immediately prior to shipment and after delivery when temperatures in Las Vegas are over 98 degrees.

B. Delivery:
   1. Deliver packaged material in sealed waterproof bags or containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.
   2. Deliver only plant materials that can be planted in one day unless adequate storage and watering facilities are available on project site.
   3. Notify Owner’s Representative of delivery schedule a minimum of 48 hours in advance so plant material can be inspected prior to unloading from trucks.
   4. Remove rejected materials immediately from site.
   5. Do not lift, move, adjust to plumb, or otherwise manipulate plants by trunk or stems. Keep plants moist at all times.
   6. Spray additional anti-desiccant after trees have arrived when temperature are over 100 degrees and winds exceed 20 miles per hour. This includes plants that have been installed and the temperature has increased causing stress to the plant.

1.10 SEQUENCING AND SCHEDULING

A. Coordinate the work of this Section with installation of underground irrigation system, utilities, piping and watering heads.

B. Protection:
   1. Do not move equipment over existing or newly placed structures without approval of Site Superintendent.
   2. Provide board covering as required to protect paving.
   3. Protect other improvements from damage with protection boards, ramps and protective sheeting.

C. Utilities:
   1. Determine location of underground utilities and perform work in a manner which will avoid possible damage. Hand excavate, if required, to minimize possibility of damage to underground utilities. Repair and replace immediately at Contractor's expense utilities, conduits, etc. that are damaged as a result of Contractor's work. Call before you dig.
   2. Coordinate work with irrigation contractor to prevent damage to underground irrigation system.

## PART 2 PRODUCTS

### 2.1 TREES, PLANTS, AND GROUND COVER

A. Trees, Plants, and Ground Cover: Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the work. At least 10% of all plant varieties to have nursery identification tags attached.

B. Plants to be in compliance with the *Arizona Nursery Association Recommended Tree Specification* (1989) standards. If a plant is not on that list then it shall be in compliance with the *USA Standard for Nursery Stock* current edition and/or *Hortus Third*.

C. Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae and shall have healthy, well-developed root systems. They shall be free from physical damage or adverse conditions that would prevent thriving growth. Soil in the containers shall be free of disease and pathogens.

D. Plants shall be true to species and variety and conform to the measurements specified.
   1. Plants larger than the specified size may be used if approved by Owner’s Representative. Use of such plants shall not increase Contract price. If larger plants are approved, the ball of earth shall be increased in proportion to the size of the plant.
   2. Plants shall be measured when branches are in their normal position. Height and spread dimensions specified refer to main body of plant and not branch tip to tip. Caliper measurement shall be taken at a point on the trunk 6 inches above natural ground line for trees up to 4 inches in caliper and at a point 12 inches above the natural ground line for trees over 4 inches in caliper.
   3. If a range of size is given, no plant shall be less than the minimum size and not less than 40% of the plants shall be as large as the maximum size specified.
   4. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required.
   5. Plants that meet the measurements specified, but do not possess a normal balance between height and spread, shall be rejected.

E. Container stock shall have grown in the containers in which delivered for at least six months, but not over two years. Samples must prove that no root bound conditions exist. Plants not able to stand upright without staking will be rejected. No container plants that have cracked or broken balls of earth when taken from container shall be planted except upon special approval by Owner’s Representative.

F. Plants shall not be pruned before delivery. Trees, which have damaged or crooked trunks and or leaders, or multiple leaders, unless specified, will be rejected. Trees with abrasions of the bark, sunscald, disfiguring knots, or fresh cuts of limbs over 3/4 inch, which have not completely calloused, will be rejected.

G. Trees are to be selected first according to caliper size and second by the box size. Unless noted otherwise. Trunk caliper size requirements will take precedence over box size unless noted by the Owner's Representative.
   1. Caliper will be measured six inches above graft or six inches above root ball if grown from seed.
   2. Conform to the requirements of ANSI Z60.1 for tree branching configuration and shrub cane quantities for the type and species of each plant specified.

H. In summer months wrap all tree trunks that are prone to sun scald, remove after September 30.

2.2 SOIL AND AMENDMENT MATERIALS

A. Refer to section 32 91 19 Landscape grading for fill material requirements.

B. Agriform' (20-10-5) pre-plant 21 gram: (2) per 1-gallon plants, (3) per gallon 5-gallon plants, (8) per 15-gallon plants (20) per 24-inch box, (30) per 36 inch box, (40) per 48 inch box, (50) per 54 inch box and (20) per palm. Sizes not listed shall use the closest box size. Larger gallon containers shall use quantities based upon the equivalent box size as defined by the American Standard for Nursery stock.

C. Soil amendment: "*Soils Plus"* shredded, loose, free of lumps, roots, inorganic material or acidic materials.

D. Organic addition: "Grow-Power Plus"

E. Soil Sulphur, Hi-Yield or equal.

F. Liquid fertilizer 'Grow Power' 4-8-2.

G. Water: Clean, fresh and free of substances or matter, which could inhibit vigorous growth of plants.

2.3 SOILS

A. Fill Material: Contractor is required to process fill material to remove all rocks, etc. over 2inches in diameter prior to placement. No rocks larger than 2 inches in diameter are allowed as fill. Fill material is to have positive percolation rates.

B. Remove and dispose of rocks removed during soil processing at an appropriate off-site dumping area.

C. Imported topsoil, sandy/loamy texture with no gravel particles. See Section 32 91 19, Landscape Grading.

2.4 GRANITE COLORED CRUSHED ROCK MATERIALS

A. Crushed rock 3/8" minus shall conform to the following gradations:

PERCENT PASSING U.S STANDARD SIEVE

| Sieve Size | 3/8" | #10 | #16 | #100 | #200 |
|---|---|---|---|---|---|
| Percent Finer by weight | 95-100 | 60-95 | 40-60 | 20-40 | 0-20 |

   1. Riprap used for slopes over 6:1 or for drainage swales should be an industry standard 4" to 8" granite riprap.

B. All rock must meet the following requirements:
   1. Rip Rap Durability: %loss after 500 revolutions < 45%.
   2. Crushed Rock Durability" % loss after 500 revolutions < 50%.
   3. pH should not be less than 6.0 and or greater than 8.0 and free of basic or acidic compounds.
   4. Sulfate (SO4): <0.10%.
   5. Potassium & Sodium (K & Na): The sum of these two as a total weight < 1.0%.
   6. Calcium (Ca): Percent of total weight < 2.0%.

7. Toxicity: Must meet the minimum EPA testing standards for arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, and silver.
8. Results of testing for above listed chemical properties is to be current within six (6) months of installation and within the current guidelines established for Landscape Aggregate Suppliers by the Clark County Department of Development Services, Building Division.

C. Results of testing of above chemical properties should be current within six-months of installation and within the guidelines established for Landscape Aggregate Suppliers by the Clark County Department of Development Services, Building Division, effective July 1, 2004.

D. See planting drawing for size, type, and color.

2.5 DRAIN GRAVEL: ¼" diameter pea gravel.

2.6 STAKING MATERIALS:

A. Tree Stakes: All stakes are to be Lodge pole pine unless noted in the details. Lodge pole stakes shall have a 10 inch tapered driving point and chamfered top; treated with copper napthanate or pentachlorophenol to heartwood; green in color, 2 inches in diameter by 10 feet in length for 15 gallon trees and 3 inches in diameter by 10 feet in length for 24 inches box trees or greater. If tree is staked, 24 inches of stake is to be driven into soil. Staking shall be by industry standards. Do not stake into root ball areas.

B. All tree ties for staking to be done with wire gauge #8 or #9 and GCS tree strap (nylon) or approved equal according to manufacturer's specifications. Attach wiring securely to poles with 2 galvanized staples each strap. Nursery tape or rope will not be considered an adequate substitute. Approved nylon tree strap substitutes will be allowed.
1. Trees less than 1 ½" caliper use GCS V-Strap, Model #1018 or equal.
2. Trees over 1 ½", under 2 ½" caliper use GCS Treestrap, Model #1018 or equal.
3. Trees over 2 ½" caliper use GCS Treestrap, Model #3724 or equal.

C. Multi-trunk tree ties to be staked with three or more lodge pole pine stakes in a triangular configuration with the branches attached to wire and nylon strap. Wiring to be secured to poles with 2 galvanized staples each strap. Spacing of poles may vary upon individual tree needs.

D. If the tree is stable enough to withstand 50 mph wind conditions staking will not be required, if wind conditions impact the tree the contractor is to provide the required staking to stabilize and protect the tree from the seasonal winds. Trees that are not staked shall not be exempt from warranty and replacement requirements in the event of high winds or other adverse conditions.

2.7 ANTI-DESICCANT

A. Anti-desiccants for retarding excessive loss of plant moisture and inhibiting wilt shall be spray able, water insoluble vinyl-vinyledine complex, which will produce a moisture-retarding barrier not removable by water. Wilt-proof Formula NCF as manufactured by Nursery Specialty Products, Greenwich, Connecticut, or approved equal.

2.8 PRE-EMERGENT MATERIAL

A. Approved granular pre-emergent: 'Snapshot' and 'XL 2 G'.

2.9 GEOTEXTILE FABRIC: Shall conform to the following standards:

A. Weight: ASTM D 1777 (4.3 oz/yd$^2$)

B. Grab Strength: ASTM D 1682

C. Puncture: ASTM D 751

D. Flow Rate: Falling Head Test (120 gpm/$ft^2$)

2.10 SOURCE QUALITY CONTROL

A. Provide inspection for verifying acceptability of plants prior to planting.

B. Organic Material Soils Plus: When left in large piles and in windy conditions, the piles are to be tarped and secured to the ground with stakes.

C. Prior to grass installation and after the irrigation system has been installed water the topsoil with the current irrigation system for dust control.

## PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that prepared subsoil and planters are at the proper sub-grade elevation and ready to receive work of this section.

B. Saturate soil with water to test drainage.

C. Verify that required underground utilities are available, in proper location and ready for use.

D. Beginning of installation means acceptance of existing conditions.

E. Irrigation: Do not commence planting work prior to installation and acceptance of irrigation system, unless approved by Owner's Representative.

3.2 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds, and undesirable plants and their roots. Remove contaminated subsoil.

C. Dig pits and beds as per planting details.

D. Layout and Staking: Layout plants at locations shown on Drawings. Use steel wired flags, color-coded for each species of plants. Stake each tree. Place shrubs in position on bed areas before cans have been removed.

E. Review: Locations of plants will be checked in the field by Owner's Representative and will be adjusted to exact position before planting begins. Right is reserved to refuse review at this time if, in the opinion of the Owner's Representative, a sufficient quantity of plants is not available. Owner's Representative reserves the right to interchange or adjust the locations of plants prior to planting.

F. Equipment for Digging Plant Pits: Use backhoe or handwork to dig tree pits. Sides of the tree pit are to be sloped after excavation. See planting drawing for the hole size formula. Do not use an auger or tree spade.

G. Containerized Plant Pits: Excavate square plant pits as shown in the planting details. Remove excavated soil from project site and/or dispose of as directed by Owner's Representative.

H. Verify that planter walls have been waterproofed prior to installing soil mix.

3.3 PLANTING

A. Planting schedule: See plant list on planting drawing.

B. Environmental requirements:
   1. Do not install plant life when ambient temperatures may drop to below 35 degrees F or above 105 degrees F.
   2. Do not install plants when wind velocity exceeds 25 mph.

C. Place plants for best appearance for review and final orientation by Owner's Representative.

D. Set plants vertical and flush to finish grade. Do not install soil on top of the root ball. The root ball shall be flush with finish grade.

E. Top dress with (1) one inch of decomposed granite above the root ball area. Provide 2 inch depth elsewhere.

F. Remove all root containers. All containers are to be cut with cutter on 2 sides to remove plant. Support root ball during installation to prevent cracking.

G. Pry off bottom boards of boxed trees rather than hammering boards off. Boxed plants may not be planted with the sides of the box in place. In special situations Palo Verde trees are to have the bottom portion of the box left when planted. Scarify root ball before planting.

H. Set plants in pits of beds, partly filled with prepared soil mixture. Remove burlap, ropes, and wires from the root ball. Scarify root ball before planting.

I. Saturate soil with water when the pit or bed is half full of soil mix and again when full.

J. Install Agriform tablets when hole is 2/3 full.

K. Backfill: for trees and shrubs
   1. Mix to consist of (2) parts "*Soils Plus*" (3) parts imported topsoil and (2) parts native soil.
   2. Do not add additional soil above the root ball.
   3. Add to and mix into this, soil sulfur according to following rate per plant container size:
      a. 1 gallon = 1/4 cup
      b. 5 gallon = 1 cup
      c. 15 gallon = 2 cups
      d. 24 inch box = 3 cups
      e. 36 inch box = 4 cups
      f. 48 inch box = 5 cups
      g. 54 inch box or larger = 8 cups
      h. Palms box = 6 cups
   4. For Palo Verde trees use only (1) part "*Soils Plus*" (3) parts import and (2) parts native soil.
   5. Palms use 100% *Aquaria* sand from Vegas Rock or mortar sand no larger than 1/16 inch in size.
   6. Water settle all soils prior to planting.

L. After planting, apply grow power 4-8-2 liquid fertilizer to Soil surface directly above root zones of all trees and shrubs. Ratio: (2) tablespoons per gallon of water shall provide 20 square feet of coverage.

M. Watering Basin: Form saucer with 3 inches high by 6 inches wide berm centered around tree and shrub pit 12 inches wider than root ball diameter. Do not form saucer around tree in lawn area.

N. For trees in lawn areas, keep a 2 feet diameter (not radius) circle centered on the tree trunk free of turf and weeds. Use a precise template covering the areas outside of the 2 feet circle in applying herbicide to ensure a crisp shape without over spray die back. Maintain 2 feet diameter grass by filling in with 1-inch diameter bark mulch 2 inch depth.

O. When pruning, the Contractor is not to prune more than 1/10 of the canopy off newly planted trees. Contractor to complete pruning before Substantial Completion, but after all planting is complete.

3.4 CRUSHED ROCK MULCH INSTALLATION

A. Remove all grass as required in the demolition or noted on the drawings, grass to be sod cut to a thickness of 2-inches and shovel cut around tree roots. Protect all tree roots do not eliminate roots unless directed or approved by the Owner's Representative.
   1. When seasonal conditions apply (2) herbicide applications to kill Bermuda grass four weeks prior to sod removal.
   2. Apply geotechnical fabric using 9-foot widths, over lap each section on to the adjacent fabric with a four-foot overlap. All fabric installations are to be reviewed and approved prior to the crushed rock applications.
   3. Geotechnical fabric installations shall be applied to all crushed rock installations.

B. Granular pre-emergent shall be applied to all planting beds, avoid pre-emergent applications to areas that are to be seeded.
   1. Two (2) pre-emergent applications are required during the rock mulch installation. See rock mulch detailing on the drawings.
   2. Apply the first pre-emergent to the soil prior to the fabric installation; thirty days after the rock mulch has been applied apply a second pre-emergent application. Submit receipts of material type and amounts applied
      a. Application rate for pre-emergent, (5) five pounds per 1000 SF.
      b. All pre-emergent applications are to be water activated within two (2) hours after applied.

C. Where existing weeds exist it is the contractor shall eradicate the weeds by using herbicides and manual procedures for eradication. It is required to keep a record of all herbicide applications noting the date and location of such applications. If seasonal conditions (winter) exist postpone the herbicide application until temperature are warm enough to kill plants that are in a growing condition.
   1. Apply at a minimum of four (4) herbicide applications, one application each week for four weeks to kill existing weeds and grass in areas programmed for crushed rock.
   2. Each week submit photos and receipts of each herbicide application to the Architect.

D. The surfaces upon which the crushed rock mulch is to be placed shall be graded and compacted to a density of 90 percent. The areas on which the rock mulch is to be placed shall be reasonably smooth and free of all deleterious material. Rocks larger than one-inch in diameter shall be removed and disposed of by the contractor.

E. Crushed rock mulch shall not be placed until the required water distribution systems and planting operations have been completed within the area.

F. Crushed rock mulch shall be evenly distributed over the designated areas. The depth of the rock mulch shall be at least 2-inches in depth up to the plants root ball. The rock mulch depth over the plant root ball shall be 1-inch depth.

G. After placing, spreading, grading and applying the pre-emergent to the rock mulch the contractor shall water settle the total thickness of the rock mulch, settling the minus material in the crushed rock and activating the pre-emergent material.

H. The Contractor shall correct all erosion that occurs within the rock mulch areas immediately.

3.5 CLEAN UP

A. During course of planting, excess and waste materials shall be continuously and promptly removed and all reasonable precautions taken to avoid damage to plants and existing vegetation. Walks, drives and paving shall be kept clean and clear from debris, materials and equipment, as much as possible.

B. When planting is complete in any one area, the area shall be cleared of all debris, rubbish, excess backfill mix, and waste materials. Upon completion of entire work and before Final Inspection, all debris, rubbish, topsoil, and waster materials shall be removed from site, all areas of exposed soil raked smooth, and all paving to be swept and cleaned. Remove soil or other materials from site amenities.

3.6 MAINTENANCE

A. Maintain installed landscape through the date of substantial completion.

B. For more information regarding maintenance after substantial completion see section 32 01 90 Landscape Maintenance.

C. Provide a one-year warranty starting from the substantial completion date for all trees and palms. All plants are to have a complete warranty. Warranty is to include:
   1. Death
   2. Unsatisfactory growth
   3. Other defects identified by the owner's representative.

3.7 MAINTENANCE REQUIREMENTS

A. Maintain plant life immediately after placement until plants are well established and exhibit a vigorous growing condition.

B. All plantings or replacement planting for dead or damaged plants must be completed before Substantial Completion Acceptance unless directed otherwise by the Owner's Representative.

C. Maintenance to include:
   1. Cultivation and weeding plant beds and tree pits.
   2. The control of weeds shall be accomplished either by the use of herbicides or manual means. The Contractor shall keep a record of all applications, listing the type of herbicides used, the rate and method of applications, and the date and locations of the applications. A copy of this record shall be submitted to the Housing Authorities' Representative & the Architect every month with the pay request.
   3. Application of herbicides for weed control in accordance with manufacturer's instructions. Remedy damage resulting from use of herbicides.
   4. Supply individual Jones Gardens Office a schedule of pesticides, herbicide, pre-emergent and fertilizing application at least seven (14) days before chemical treatment of all pesticide and weed problems and fertilizing. Application of pesticides in accordance with manufacturer's instructions. Remedy damage from use of pesticides.
   5. Irrigating sufficient to saturate root system. Adjust watering for current weather conditions and season.
   6. Trimming and pruning, including removal of clippings and dead or broken branches, and treatment of pruned areas or other wounds. Work to be performed by a certified arborist.
   7. Disease control.
   8. Maintaining and adjusting tree, guys, and stakes, repair or replace accessories when required.
   9. Apply post-emergent herbicides to control all weed growth, at a minimum, on a monthly basis.
   10. Cleaning and removal of debris in landscape areas.
   11. Erosion control of all planting and grass areas. Clean and repair all damaged areas.
   12. Landscape areas shall be kept free of all debris at all times.
   13. Contractor shall repair any and all eroded areas by in filling with topsoil and/or crushed rock to restore the area. Factors that cause the erosion shall be reported immediately to the Owners Representative.

3.8 LANDSCAPE PROGRESS REVIEWS

A. Installation work is subject to review at any time during by the Architect and other Owner's Representative.

B. Formal reviews will be conducted after the Architect Owner's Representative have received a written request at the following intervals during the construction period:
   1. Irrigation piping, connections to water source & equipment, water pressure test etc.
   2. Review upon delivery of plant materials.
   3. Review of layout of planting pits.
   4. Review of excavated planting pits.
   5. Review of all landscape grades.
   6. Review of installed plants and decomposed granite.

C Post Construction Completion Review
1. Substantial Completion Walk Through (Punch List Creation).
2. Walk-thru for Landscape Warranty/Maintenance Period (Punch List Completion)
3. Final Acceptance Walk-Thru. (Completion of maintenance period).

3.9 SUBSTANTIAL COMPLETION WALK THROUGH AND PUNCH LIST REVIEW

A. Substantial Completion Requirements:
1. All as-built drawings are to be approved and accepted before the punch list walk. If drawings are not approved prior to the scheduled walk, this review will not proceed.
2. Arrange for Owner's Representative presence, a minimum notice of 72 Hours is required. The contractor is to turn over all required equipment, keys and supplies (provide in writing all material names, quantities and manufacture names) to the Housing Authority Representative. A copy of the material list is to be submitted to the Owner's Representative.
3. Entire landscape shall be installed as per planting plans. Any deviations or inadequacies due to field conditions shall have been corrected prior to walk-thru.
4. Owner's Representative will provide a punch list of items to be corrected prior to commencement of Landscape Warranty/Maintenance Period. Contractor shall complete all items prior to the maintenance period.
5. Reviews include all planting, turf and irrigation areas.
6. Open all valve boxes for review - valves that have been buried under the areas are to be reviewed prior to Sodding.

3.10 PUNCH LIST REVIEW FOR ACCEPTANCE

A. Walk-thru for Landscape Punch List Completion:
1. All landscape work noted on the punch list is to be completed with in seven working days after the Jones Gardens Office site has been walked for the original punch list.
   a. The contractor shall submit in writing that all of the items on the punch list been completed. Work not completed can delay the maintenance start date at the discretion of the owner's representative.
2. Contractor shall demonstrate that all items, which are deficient or incorrect, have been corrected for the walk-thru. Items deemed not acceptable by Owner's Representative shall be revoked or replaced to complete satisfaction of the representative.
3. If items identified on the final walk-thru list are not completed properly prior to the starting of the Warranty Maintenance Period, the Contractor can be charged for time spent for all subsequent walk-throughs and the walk-through will be terminated. Funds will be withheld from final payment and/or retainage to Contractor, in amount equal to additional time and expenses incurred by Owner's Representative to conduct and document further walk-thru as deemed necessary to ensure compliance with Contract Documents.
4. Upon satisfaction of the above, the Owner's Representative will issue in writing that the punch list is accepted and that the Landscape Warranty/Maintenance Periods shall begin.

B. Refer to section 32 01 90 for maintenance requirements.

3.11 FINAL ACCEPTANCE REVIEW

A. At the end of the Landscape Warranty/Maintenance period, the contractor is to review the Jones Gardens Office site before final acceptance walk. All plants and grass areas are to be in excellent condition if they are not it will be deemed that the maintenance requirements were not met and monies will be withheld to correct the incomplete maintenance work and or damage.

B. All rock mulch areas are to be level and raked clean. All plants are to be in good health conditions and the irrigation equipment is to be in 100% working order. If all the work is found to be complete and in accordance with the construction documents, this review will be constituted as the "Final Acceptance" and the landscape work will be closed-out. Written notification will be sent upon acceptances of the work.

C. If the review reveals any unsatisfactory work, the Contractor will continue maintenance until the replaced work is accepted by the Owner's Representative. Additional inspections to review compliance will be billed to the contractor by the Owner's Representative.

D. The Landscape Contractor shall request, in writing, the final acceptance review.

E. The Owner's Representative will not release retention monies until Final Acceptance of the work.

END OF SECTION