NOTICE TO CONTRACTORS
CARSON CITY PURCHASING AND CONTRACTS
201 NORTH CARSON STREET, SUITE 3
CARSON CITY, NEVADA 89701
775-283-7137 / FAX 775-887-2107
http://www.carson.org/Index.aspx?page=998

ADVERTISED BID #1415-143
BID TITLE "Carson City Animal Services Facility"
Labor Commissioner PWP# CC-2015-116
Engineer's Estimate: $3,350,000

PLEASE NOTE: Carson City has extensively revised these Contract Documents and all Bidders are advised to read these documents thoroughly before submitting a bid.

SUMMARY

Carson City is accepting sealed bids for all labor, materials, tools and equipment necessary for the Carson City Animal Services Facility project. The Carson City Animal Services Facility Project consists of a 10,183 square feet building on a 1.5 acre site, including street frontage improvements. The project includes all common phases of construction customarily associated with this type of project. Sealed bids must be submitted in accordance with the bid documents, drawings and plans, specifications and special conditions related hereto.

CONTRACTOR'S LICENSE: Carson City has determined that the responsive bidder must possess a minimum of a Class B license with appropriate sub-classifications or subcontractors. All Contractors license shall be in good standing and issued by the Nevada State Contractor's Board at the time of the bid.

BID DOCUMENTS may be obtained as follows and the cost is non-refundable.

You may download this Bid Document, excluding the drawings, and a pdf version of the Bid Bond and Bid Proposal to prepare your bid from the Carson City website http://www.carson.org/Index.aspx?page=998. All plans and documents were posted to the City's website on July 30, 2015. ***Downloading this bid document from the website does not put you on the plan holders list; you must click the link at the bottom of the page and provide your information to add your company name to the plan holders list.***

You may purchase the drawings separately from the following businesses, please call ahead to place your order.

Nevada Blue, 280 E Winnie Lane, Carson City, NV 89706 (775) 883-6011www.nvblue.com

OSI, Inc., 4750 Longley Lane, Suite 103, Reno, NV 89502 (775) 827-4343 www.osireno.com

Sierra Contractor's Source, 860 Maestro Dr., Suite B, Reno NV 89511 (775) 329-7222 www.scsplanroom.com

INSPECTION OF BID DOCUMENTS: All documents related hereto may be viewed at the following location:

CARSON CITY PUBLIC WORKS DEPARTMENT, 3505 Butti Way, Carson City, Nevada 89701.

ADDENDA: All addenda are posted on Carson City's website http://www.carson.org/Index.aspx?page=998. It is each bidder's responsibility to ensure that they have received all addenda prior to submission of their sealed bid.

MANDATORY PRE-BID CONFERENCE will be held on August 18, 2015, at 3505 Butti Way, Carson City, Public Works Office. The meeting will commence promptly at 2:00 p.m. The meeting is only for the General Contractors.

QUESTIONS regarding this bid must be received a minimum of four (4) days prior to bid opening.

SEALED BIDS must be submitted in a sealed envelope which shall be clearly marked with title and number of this Bid Document to Carson City Purchasing and Contracts Department, 201 North Carson Street, Suite 3, Carson City, Nevada 89701, by not later than 11:00 a.m. on August 28, 2015. Bids received after the date and time set for receipt will be **REJECTED** and returned to the bidder unopened.

BID OPENING will be held publicly at 11:10 a.m. on August 28, 2015, at 201 North Carson Street, Suite 3, Carson City, Nevada 89701. Bidders, their representatives, and all other interested persons may be present during the bid opening.

A tabulation of the **BID PROPOSAL** will be posted on Carson City's website within 48 hours.

AWARD RECOMMENDATION will be made by the Carson City Purchasing and Contracts Department. You are encouraged to visit the City's website for that recommendation or contact Laura Tadman at LTadman@carson.org for the recommendation.

NOTICE OF PROTEST OF AWARD OF CONTRACT must be in compliance with NRS 338.142 and submitted in writing to the Carson City Purchasing and Contract Department of the Division of Finance (Department) at City Hall, 201 N. Carson Street, #3, Carson City, NV 89701 within five (5) business days after the date the Director of

such Department or the City's Public Works Director, as the City's authorized representative, makes a recommendation to the award the contract.

The notice of protest must include a written statement setting forth with specificity the reasons the person filing the notice believes the applicable provisions of law were violated.

A person filing a notice of protest may be required by the City's Public Works Director or its Purchasing and Contracts Administrator, at the time or soon after the notice of protest is filed, to post a bond with a good and solvent surety authorized to do business in this state or submit other security, in a form approved by such authorized representative of the City and the City shall hold the bond or other security until a determination is made on the protest. A bond posted or other security submitted with a notice of protest must be in an amount equal to the lesser of Twenty-five percent of the total value of the bid submitted by the person filing the notice of protest; or Two hundred fifty thousand dollars.

A notice of protest filed under these provisions operates as a stay of action in relation to the awarding of any contract until a determination is made by the City's Board of Supervisors on the protest.

A person who makes an unsuccessful bid may not seek any type of judicial intervention until the City's Board of Supervisors has made a determination on the protest and awarded the contract.

Neither the City's Board of Supervisors nor any authorized representative of the City or such public body is liable for any costs, expenses, attorney's fees, loss of income or other damages sustained by a person who makes a bid, whether or not the person files a notice of protest pursuant hereto.

If the protest is upheld, the bond posted or other security submitted with or soon after the submission of the notice of protest must be returned to the person who posted the bond or submitted the security. If the protest is rejected, a claim may be made against the bond or other security by the City's Board of Supervisors in an amount equal to the expenses incurred by the City or its Board of Supervisors because of the unsuccessful protest. Any money remaining after the claim has been satisfied must be returned to the person who posted the bond or submitted the security.

BID AWARD will be made by the Carson City Board of Supervisors and is scheduled for September 17, 2015 and their decision is final. The Carson City Board of Supervisors meeting will be held in the Sierra Room of the Carson City Community Center, 851 East William Street, Carson City, Nevada 89701 beginning at 8:30 a.m.

PRICES must be quoted FOB Carson City, Nevada and are valid for sixty (60) calendar days after the **BID OPENING**.

Signature in Project File

Laura Tadman
Purchasing and Contracts Administrator

Signature in Project File

Darren Schulz, Public Works Director

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Drawing Sheets (87 Sheets):

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INSTRUCTIONS TO BIDDERS

CORRESPONDENCE AND/OR COMMUNICATIONS:

The provisions of this contract shall be approved by the governing body of the City, and the normal lines of communications shall be between the following persons and the authorized representative of the Contractor:

A. **Contract Administrator**
Laura Tadman, Manager
Carson City Purchasing and Contracts
201 North Carson Street, Suite 3
Carson City, Nevada 89701
775-283-7137
FAX 775-887-2107
LTadman@carson.org

B. **Owner's Representative**
Darren Schulz, Public Works Director
Carson City Public Works Department
3505 Butti Way
Carson City, Nevada 89701
775-887-2355
FAX No. 775-887-2112
DSchulz@carson.org

C. **Construction Manager**
Rick Cooley, Construction Manager
Carson City Public Works Department
3505 Butti Way
Carson City, Nevada 89701
775-887-2355
FAX No. 775-887-2112
RCooley@carson.org

NOTE: The City reserves the right to appoint a substitute designee for these positions at the City's discretion.

END OF DOCUMENT

INSTRUCTIONS TO BIDDERS

B.1 BIDDING PROCEDURES

A. Pre-bid Conference

If required, a Pre-bid Conference will be held at the time and place indicated on the Notice to Contractors. The purpose of this conference is to discuss the Project, prospective Bidders concerns, and key issues of the Project. Attendance is not mandatory unless otherwise indicated.

B. Designated Contacts

The designated contact for questions pertaining to the Contract Documents, Specifications and/or Drawings is the designated Contract Administrator. All questions should be submitted in writing, and will receive a written response from the Contract Administrator.

C. Contract Drawings

The Contract Drawings used for Bidding shall have the following title:

CONTRACT DRAWING TITLE: **"Carson City Animal Services Facility"**

The Contract Drawings do not purport to show all the details of the Work. They are intended to illustrate the character and extent of the performance desired under the Contract; therefore, they may be supplemented or revised from time to time, as the Work progresses, by the Construction Manager. Drawing revisions and/or additional drawings or sketches will be made and furnished to the Contractor if they are deemed necessary to adequately illustrate the Work.

D. Interpretations and Addenda

Bidder shall take no advantage of any apparent error or omission in this Bid Document. In the event the Bidder discovers such an error or omission, he/she shall immediately notify the City's Contract Administrator in writing or by email. Carson City will then make such corrections and interpretations as may be deemed necessary for fulfilling the intent of this Bid Document through the issuance of an Addendum. Any Addendum or clarification supplementing this Bid Document, the Drawings, and the Specifications, issued prior to the date and time set for the submittal of Bid Proposal shall be made part of the Contract.

If it becomes necessary to revise any part of this Bid Document, a written addendum will be provided to all plan holders. The City is not bound by any oral representations, clarifications, or changes made by Carson City employees, or representatives, unless such clarification or change is provided to all Bidders in written addendum form.

Addenda shall be sent by fax, e-mail or posted on the City's website to all who are known by the City to have received a complete set of Bid Documents (plan holders). No Addendum shall be issued by Carson City less than two (2) working days prior to the advertised date and time for Bid submittal. **Note:** Bidders are requested to submit questions four (4) working days prior to the advertised date and time for Bid submittal.

Prior to submission of the Bid Proposal, each Bidder shall ascertain that he/she has received all Addenda issued. The Bidder shall acknowledge receipt of all Addenda by completing the acknowledgment space provided on the Bid Proposal.

E. Bid Preparation and Submission

1. Bid proposals are to be submitted on the Bid Proposal provided and must be manually signed by pen by an officer or authorized agent (with attached power of attorney) of the Bidder. All figures must be written in ink or typewritten. Figures written in pencil or erasures are not acceptable. Any interlineation or alteration must be initialed in ink by a person authorized to bind the Bidder to a Contract. If the person making said interlineation or alteration is not the same person who signs the Bid Proposal, such person must write his/her signature and print his/her name and title on each page of the Bid Proposal where initials appear. Written delegation of signature authority to an agent acting on behalf of the Bidder must accompany the sealed Bid and cannot contain any language which states the Bidder retains final approval of acceptance of any of the terms, conditions, specifications and/or finalized Contract.

2. Each Bid shall be submitted in a sealed envelope and the envelope must be prominently marked on the lower left corner as follows:

   SEALED BID
   BID NO.: 1415-143
   OPENING: August 28, 2015 at 11:10 am
   COMPANY NAME:

3. Carson City will not consider a Bid that fails to comply with the above stated requirements. Carson City will not be responsible for the premature opening of a Bid not properly addressed or identified. All Bids must be received prior to the date and time specified in the Notice to Contractors at the following address:

   Carson City Purchasing and Contracts Department
   201 North Carson Street, Suite 3
   Carson City, Nevada 89701

4. If forwarded by mail, the sealed envelope containing the Bid must be enclosed in another envelope addressed as specified. Mailed Bids must be received by the Purchasing and Contracts Department prior to the closing date and time for receipt of Bids in order to receive consideration. Bids submitted by facsimile or email will not be accepted or considered.

F. Documents Necessary for Submittal

The Bid Bond, Bid Proposal Summary, Bidder's Preference Certificate of Eligibility (if applicable) and any other documents required as defined in the Special Conditions all shall be included in the sealed envelope. **Do not return the entire spec book with the Bid.** Carson City will not consider a Bid received if there is an omission of or failure to complete any portion of the required documents at the time of the Bid Opening.

G. Bid Security

1. Each Bid Proposal must be accompanied by a Cashier's check, Certified Check, or Bid Bond acceptable to Carson City in an amount equal to at least five percent (5%) of the Bidder's "Base Bid" Proposal. Said Bid Security shall be payable without condition to Carson City as a guarantee that the Bidder, if awarded the Contract, will promptly execute such Contract in accordance with the Bid Proposal and, in the manner and form required by the Bid Document, and will furnish the required PERFORMANCE and PAYMENT bonds. (Refer to Documents # 2151 and 2152). Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, the amount of the Bid Security may be forfeited to the City as liquidated damages, not as penalty. All checks must indicate the Payee as "Carson City, Nevada" and reflect the Bid Title and Number. Failure to enclose a Bid guarantee with the sealed Bid will cause the Bid to be rejected and not considered.

2. Surety companies issuing bonds must be licensed to issue surety by the State of Nevada Insurance Division pursuant to NRS 683A.090 and issued by an appointed agent pursuant to NRS 683A.280. Bonds issued by an individual surety are not acceptable to the City.

3. The City will have the right to hold the Bid Security of Bidders to whom an award is being considered until either: (a) the Contract has been executed and bonds have been furnished, (b) the specified time has elapsed so that Bids may be withdrawn, or (c) all Bids have been rejected.

H. Quantities

The quantities given in the Bid Document or indicated by the unit Bid items are approximate quantities and are intended to illustrate the Scope of Work. The Bidder shall be responsible for verifying the exact quantities involved each month through the measurement and payment provisions of the Bid Document.

INSTRUCTIONS TO BIDDERS

I. Compensation

The Total Bid Price shall cover all Work required by the Bid Document. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies, and appurtenances; providing all construction equipment, tools and temporary utilities; and performing all necessary labor and supervision to fully complete the Work, shall be included in the unit and lump sum prices Bid. All work not specifically set forth as a pay item in the Bid Proposal shall be considered a subsidiary obligation of the Bidder, and all costs in connection therewith shall be included in the prices Bid.

J. Schedule of Values

The purpose of the Schedule of Values shall serve the City in two (2) distinct areas:

1. **PRIOR TO AWARD OF BID:** Carson City may request a Schedule of Values for any or all item(s) included in the Bid Proposal for the purpose of determining an unbalanced Bid. The analysis shall be conducted by the City.

2. **AFTER AWARD OF BID** Carson City will request a Schedule of Values for any or all item(s) included in the Bid Proposal for the purpose of making partial payments to the Contractor.

Under no circumstances may any Bid item reflected as LUMP SUM or otherwise be increased or decreased as a result of the Lump Sum Bid breakdown analysis.

All prospective Bidders may be required to prepare a Schedule of Values, and it shall be the Bidder's responsibility to verify the quantities as shown on the Drawings before preparing his/her Bid. The schedule as shown on the Contract Drawings does not constitute a complete outline of the Work to be performed by the Contractor in accordance with the Contract Drawings and Specifications. This list is intended to include all major items, and the Bid computed therefrom will be the maximum compensation for all work and materials furnished by the Contractor in order to comply with the Contract Drawings and Specifications, whether or not indicated in the approximate quantities or pertaining to the items of Work listed therein.

K. Validity of Bid

Carson City reserves the right to withhold award of the Contract for a period of sixty (60) days from the date of the Bid opening. The Bidder acknowledges in submitting his/her Bid that all prices listed in the Bid Proposal are valid for a period of not less than sixty (60) days from the date of the Bid Opening.

L. Bidders Preference

Bidders submitting a proposal to a public body for a Public Work shall bear the responsibility to ascertain the relevancy of the "preference for certain contractors" referenced in NRS 338.147. Bidders claiming preference shall submit with their Bid Proposal the "Certificate of Eligibility" issued by the State of Nevada Contractor's Board as proof of Contractor's compliance with the provisions of NRS 338.147. Failure to submit the Certificate of Eligibility with your Bid shall result in a waiver of any Bidder preference.

Note: Pursuant to Subsection 8 of NRS 338.147, the provisions of Subsection 2 of NRS 338.147 do not apply to any Contract for a Public Work which is expected to cost less than $250,000.

M. Bidders Representation

Each Bidder by submitting its Bid represents that:

1. The Bidder, signing the Proposal summary and submitting the bid represents that he/she has familiarized himself with the Notice to Contractors, Contract Drawings, Specifications, and Contract Documents and has found them fit and sufficient for the purpose of preparing his/her Bid. By submission of his/her Bid, he/she agrees to all the terms and conditions of the Bid Document and further agrees that no claim will be made against the City, the Construction Manager, or the Design Consultant for any damage that he/she or his/her subcontractors may have suffered due to the inadequacy of his/her Bid on account of any alleged errors, omissions, or other deficiencies in the Notice to Contractors, Drawings, Specifications, or Contract Documents supplied to him/her by the City.

2. The submission of a Bid shall constitute an acknowledgment upon which the City may rely that the Bidder has thoroughly examined and is familiar with the Bid Documents. The Bidder shall in no way be relieved from any obligation with respect to its proposal or to the Contract. No claim for additional compensation will be allowed which is based upon a lack of knowledge of the Contract Documents.

3. The Bidder has inspected the site(s) of the Work and is satisfied, by personal examination or by other means, of the locations of the proposed Work, of the actual conditions, including subsurface conditions, of and at the site(s) of the Work. If, during the course of its examinations, a Bidder finds facts or conditions which appear to be in conflict with the letter or spirit of the Bid Documents before submitting his/her bid, the Bidder shall request the City, in writing, to provide additional information and explanation.

4. Submission of a Bid by a Bidder shall constitute conclusive evidence that the Bidder has relied on his/her own examination of (1) the site of the Work, (2) access to the site, (3) all other data and matters requisite to the fulfillment of the Work and on its own knowledge of existing facilities on and in the vicinity of the site of the Work to be constructed under the Contract, (4) the conditions to be encountered, (5) the character, quality and scope of the proposed Work, (6) the quality and quantity of the materials to be furnished, and (7) the requirements of the Bid, the Drawings and Specifications. The Bidder is aware that soil classifications do not represent any particular stability or drainability characteristics, and are aware that water table levels can vary.

5. The information provided by the City is not intended to be a substitute for, or a supplement to, the independent verification by the Bidder to the extent such independent investigation of site conditions is deemed necessary or desirable by the Bidder.

6. The Bidder, by signing the Bid Proposal, agrees that all material and workmanship on this Project shall meet or exceed OSHA standards and NOSHA standards.

   Bidder must be duly qualified and possess the classification(s) of contractor's license stipulated by the City for this particular Work and issued by the Nevada State Contractor's Board. Nevada Contractor's License type, number, expiration date and dollar limit must be indicated on the Bid Proposal. The Bidders and the successful Contractors and their subcontractors shall comply with all provisions of NRS Chapter 624 and Nevada Administrative Code, Chapter 624. Carson City will not consider any Bid that fails to comply with these requirements.

   The successful Bidder must obtain a valid Carson City Business License within ten (10) days after the award of the Contract, or the Contractor will be declared in default of the contract.

N. Fair Employment Practices

Pursuant to NRS 338.125, it is unlawful for any Contractor in connection with the performance of work under a contract with a public body, when payment of the contract price, or any part of such payment, is to be made from public money, to refuse to employ or to discharge from employment any person because of race, creed, color, national origin, sex, sexual preference, or age to discriminate against person with respect to hire, tenure, advancement, compensation or other terms, conditions, privileges of employment because of race, creed, color, national origin, sex, sexual preference or age.

O. Preferential Employment

Pursuant to NRS 338.130, Preferential Employment in Construction of Public Works, "In all cases where persons are employed in the construction of public works, preference shall be given, the qualifications of the applicants being equal: First: To honorably discharged Army, Navy, Air Force, Marine Corps or Coast Guard soldiers of the United States who are citizens of the State of Nevada; Second: To citizens of the State of Nevada". If the provisions of NRS 338.130 are not complied with by the Contractor, this Contract shall be void, and any failure or refusal to comply with any of the provision of NRS 338.130 shall render this Contract void.

P. Subcontracting

The Bidder agrees that he/she will perform work totaling at least twenty-five per cent (25%) of the Bid amount and will not subcontract work totaling more than seventy-five per cent (75%) of the Bid amount. The Bidder shall be bound by and comply with NRS 338.141 to limit the practice of shopping for Bids and shall provide a Subcontractors Listing with the submission of their Bid. The form must have the spaces filled in for each subcontractor who will be paid an amount exceeding five percent (5%) of the Bid amount. Within two (2) hours after the opening of Bids, the bidders who submitted the three lowest Bids must submit a list of names of each subcontractor who will provide labor or a portion of the Work or improvement to the Contractor for which he/she will be paid an amount exceeding one percent (1%) of the Bid amount or Fifty Thousand Dollars ($50,000), whichever is greater

The bidder shall verify prior to submitting their Bid that all subcontractors specified are properly licensed. Substitutions of subcontractors specified in the Bid shall comply with the requirements of NRS 338.141.

Bidder agrees that if awarded the Contract, he/she will assume responsibility for acts or omissions of subcontractors and of persons either directly or indirectly employed by them, as they are responsible for the acts or omissions of persons directly employed by the Bidder. Nothing contained in the Bid Document shall create any contractual relationship between any subcontractor and the City.

Each Contractor engaged on a public works project shall report to the Labor Commissioner the name and address of each Subcontractor whom he/she engages for work on the project within ten (10) days after the Subcontractor commences work on the contract.

Substitutions for subcontractors listed in the Bid Proposal shall comply with the requirements of NRS 338.141.

Q. Site Information

Where investigations of surface or subsurface conditions have been made by the City, in respect to foundations or other structural design for design purposes only, said information is available only for the convenience of bidders but are not a part of the Bid Documents. The City, Construction Manager, and Design Consultant assume no responsibility whatsoever as to the sufficiency of borings, or of the log of test borings or other investigations, or tests, or of the interpretations thereof; there is no guarantee, warranty, or representation, expressed or implied, that the conditions indicated thereby, in fact, exist or are representative of those existing throughout the work. Such information available to bidders is not to be construed in any way as a waiver of the other provisions of this paragraph and bidders must satisfy themselves through their own investigations as to the surface and subsurface conditions to be encountered at the Site.

IB.2. OPENING OF BIDS

All Bids received at the designated time and place that comply with these requirements will be opened, publicly read aloud at the date, time and place set forth in the Notice to Contractors. Bidders, their representatives, and all other interested persons may be present at the opening and reading of Bids.

Any Bids received after the date and time set for receiving and opening Bids, as set forth in the Notice to Contractors and any Addendum, will not be considered. Any such Bids will be returned unopened to the Bidder.

A. Mistake in Bid

A request for withdrawal of a Bid due to a purported error shall not be considered unless it is given in writing to the Contract Administrator by the Bidder within forty-eight (48) hours after opening of the bid. Any such request shall contain a full explanation of any purported error and shall be supported by the original calculations on which the Bid was computed, together with a certification and notarization thereon that such calculation is the original as prepared by the Bidder or his/her agent.

In the case of a difference between written words and figures, the amount stated in written words shall govern for a Lump Sum Bid.

In the case of a difference between Unit Price and the Extended Price, the Unit Price shall govern.

B. Withdrawal of Bid

1. **Before Bid Opening** - A Bidder may request withdrawal of his/her, sealed Bid prior to the scheduled date and time of the scheduled Bid opening provided the request is submitted to the Contract Administrator's Office in writing or an authorized representative must present himself with proper identification to the Contract Administrator's Office and verbally request that the Bid be withdrawn.

2. **After Bid Opening** - No Bids may be withdrawn for a period of sixty (60) calendar days after the date and time of Bid opening, except as set forth in A above. All responsive and responsible Bids received are considered firm offers for the time period specified above and may be considered for award. The Bidder's offer will expire at the time specified above or upon acceptance by City, which occurs when the successful Bidder provides the bonds, insurance, and submits the signed Contract to the City for execution and the City executes the Contract.

IB.3 AWARD OF CONTRACT/REJECTION OF BIDS/DISQUALIFICATION OF BIDDERS

A. Award of Contract

Carson City will award the Contract pursuant to the provisions of Nevada State law including but not limited to:

(a) Chapter 332 (Purchasing: Local Governments)

(b) Chapter 338 (Public Works Projects)

(c) Chapter 339 (Contractor's Bonds on Public Works)

(d) Chapter 624 (Contractors).

B. Rejection of Bids

The City reserves the right to waive any informality or irregularity in any Bid received, and to reject any or all Bids. In the case of rejection of all Bids, the City reserves the right to advertise for new Bids or to proceed to do the Work otherwise if, in the judgment of the Carson City Board of Supervisors or Carson City Regional Transportation Commission, it is in the best interest of the City.

C. Irregular Bid

A Bid shall be considered irregular for the following reasons, any one or more of which may be cause for rejection:

1. If the Bid Proposal furnished by the City is not used or is altered.

2. If there are unauthorized additions, conditional or alternate Bids, or omissions or irregularities of any kind, which may tend to make the Bid incomplete, indefinite or ambiguous as to its meaning, or give the Bidder submitting the same a competitive advantage over other Bidders.

3. If the Bid submitted contains any erasures, interlineations, or other corrections unless each such correction is prepared and authenticated in acceptance with the provisions of Paragraph IB.1.E (1).

D. Unbalanced Bid

If the Unit Bid Item prices and/or schedule of values of a prospective Bidder's Bid are obviously unbalanced, either in excess or below the reasonable cost analysis values, in the opinion of the Owner's Representative, the Bid may be rejected. All Bids with separately priced line items shall be analyzed to determine if the prices are unbalanced. A bid may be rejected if the City determines that the lack of balance poses an unacceptable risk to the City.

A Bid with unbalanced pricing may increase performance risk and could result in payment of unreasonably high prices. Unbalanced pricing exists when, despite an acceptable total evaluated price, the price of one or more bid items is significantly over or understated as indicated by the application of cost or price analysis techniques. The greatest risks associated with unbalanced pricing occur when:

1. Over pricing of startup work, mobilization, or early items of work (front end loading) would cause a bidder to receive substantial up-front payment;

2. Base quantities and option quantities are separate line items;

3. The quantities as bid are incorrect and the contract cost will be increased when quantities are corrected;

4. On items where the quantities may vary, if the anticipated variation in quantity would result in the lower Bidder not remaining as the low Bidder;

E. Disqualification of Bidders

Any one or more of the following may be considered as sufficient for the disqualification of a prospective Bidder and the rejection of the Bid:

1. The Bidder is not responsive or responsible;

2. The quality of the services, materials, equipment or labor offered does not conform to the approved Contract Drawings and specifications;

3. Evidence of collusion among prospective Bidders; (Participants in such collusion will receive no recognition as Bidders)

4. Lack of the contractor's license classification stipulated by Carson City for this Work;

5. More than one Bid for the same work from an individual, firm, or corporation under the same or different name;

6. Lack of competency, understanding of the scope of the Work, adequate machinery, plant and/or equipment as revealed by the requested experience or subcontractor information;

7. Unsatisfactory performance record as shown by past work for the City, judged from the standpoint of workmanship, progress, and quality of services/goods provided;

8. Uncompleted work which, in the judgment of the City, might hinder or prevent the prompt completion of additional work, if awarded;

9. Failure to pay or satisfactorily settle all bills due for labor and material on any contract(s);

10. Failure to comply with any requirements of the City;

11. Failure to list, as required, all subcontractors who will be employed by the Bidder;

12. Negative actions against the Contractor's license by any Federal, State or Local department or agency;

13. Any other reason determined, in good faith, to be in the best interest of the City.

IB.4 BID PROTESTS

A Bidder may file a Notice of Protest regarding the awarding of the contract in accordance with NRS 338.142 and the Notice to Contractors (NC) above, under "NOTICE OF PROTEST OF AWARD OF CONTRACT."

IB.5 BID PREPARATION EXPENSES

By accepting the Bid Proposal of the Bidder, the City assumes no obligation to reimburse the Bidder for Bid preparation expenses. No Bidder shall have any right or claim against the City for reimbursement of Bid preparation expenses.

IB.6 COLLUSION, DISCRIMINATION, AND/OR PRICE FIXING

The Bidder certifies that any and all prices which he/she may charge under the terms of the Contract do not, and will not, violate any existing federal, state or municipal laws or regulations concerning discrimination and/or price fixing. The Bidder agrees to indemnify, exonerate and hold Carson City harmless from liability for any such violation now and throughout the term of the Contract.

END OF INSTRUCTIONS TO BIDDERS

BID PROPOSAL

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that I/We _____

as Principal, hereinafter called Contractor, and _____

a corporation duly organized under the laws of the State of Nevada, as Surety, hereinafter called the Surety, are held and firmly bound unto Carson City, Nevada a consolidated municipality of the State of Nevada, hereinafter called City, for the sum of $ _____Dollars

(state sum in words)_____
for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has submitted a bid, identified as **BID # 1415-143** and titled **"Carson City Animal Services Facility".**

NOW, THEREFORE if the City shall accept the bid of the Principal and the Principal shall enter into a contract with the City in Accordance with the terms of such bid, and give such bond or bonds as may be specified in the bidding or Bid Documents with good and sufficient surety for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof, or in the event of the failure of the Principal to enter such Contract and give such bond or bonds, if the Principal shall pay to the City the difference not to exceed the penalty hereof between the amount specified in said bid and such larger amount for which the City may in good faith contract with another party to perform work covered by said bid or an appropriate liquidated amount as specified in the Invitation for Bids then this obligation shall be null and void, otherwise to remain in full force and effect.

Executed on this _____ day of _____2015

Signature of Principal: _____

Title: _____

(Seal)

Firm: _____

Address: _____

City/State/Zip Code: _____

Written Name of Principal: _____

ATTEST NAME

Signature of Notary: _____

Subscribed and sworn before me this _____day of _____ 2015

(printed name of notary) _____Notary Public for the State of _____

Claims Under this Bond May be Addressed to:	Nevada Resident Agent Information Complete for out of state bonding companies
Name of Surety	Name of Local Agent
Address	Address
City	City
State/Zip Code	State/Zip Code
Name	Agent's Name
Title	Agent's Title
Phone	Agents Phone

Surety's Acknowledgement

NOTICE: No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for services of process in the State of Nevada. Certified copy of Power of Attorney must be attached.

BID PROPOSAL

BID # 1415-143
BID TITLE: "Carson City Animal Services Facility"

NOTICE: No substitution or revision to this Bid Proposal form will be accepted. Carson City will reject any Bid that is received that has changes or alterations to this document. Although the Prevailing Wages are provided in this bid document, the bidder is responsible to verify with the Labor Commissioner if any addendums have been issued. The successful bidder will be required to provide the current Prevailing Wages used in preparation of their bid within 24 hours of bid submission.

PRICES will be valid for sixty (60) calendar days after the bid opening which is indicated in the Notice to Contractors.

A COPY OF CONTRACTOR'S "CERTIFICATE" of eligibility issued by the State of Nevada Contractors' Board as proof of Bidder's compliance with the provisions of N.R.S. 338.147 must be submitted with his/her bid for the preference to be considered. This Statute does not apply to projects expected to cost less than $250,000.

COMPLETION of this project is expected **PURSUANT TO THE BID DOCUMENTS**.

BIDDER acknowledges receipt of _____ Addendums.

SUMMARY

	Description	Scheduled Value	Unit	Unit Price	Total Price
	Schedule A				
BP.1	Animal Services Facility –Total Project	1	LS		
BP.2	**Total Bid Price (Schedule A)**				

BP.3 Total Base Schedule A Bid Price Written in Words:

_____

BP.4 BIDDER INFORMATION:

Company Name:

Federal ID No.:
Mailing Address:
City, State, Zip Code:
Complete Telephone Number:
Complete Fax Number:
Fax Number including area code:
E-mail:

BID PROPOSAL

Contact Person / Title:

Mailing Address:
City, State, Zip Code:
Complete Telephone Number:
Complete Fax Number:
E-mail Address:

BP.5 LICENSING INFORMATION:

Nevada State Contractor's License Number:
License Classification(s):
Limitation(s) of License:
Date Issued:
Date of Expiration:
Name of Licensee:
Carson City Business License Number:
Date Issued:
Date of Expiration:
Name of Licensee:

BP.6 DISCLOSURE OF PRINCIPALS:

Individual and/or Partnership:

Owner 1) Name:
Address:
City, State, Zip Code:
Telephone Number:
Owner 2) Name:
Address:
City, State, Zip Code:
Telephone Number:

BID PROPOSAL

Other 1) Title:
Name
Other 2) Title:
Name:

Corporation:

State in which Company is Incorporated:
Date Incorporated:
Name of Corporation:
Mailing Address
City, State, Zip Code:
Telephone Number:
President's Name:
Vice-President's Name:
Other 1) Name & Title:

BP.7 MANAGEMENT AND SUPERVISORY PERSONNEL:

Persons and Positions	Years With Firm
Name 1)	

Title 1)

Name 2)	

Title 2)

Name 3)	

Title 3)

BID PROPOSAL

Name 4)	

Title 4)

Name 5)	

Title 5)

Name 6)	

Title 6)

(If additional space is needed, attach a separate page)

BID PROPOSAL

BP.8 REFERENCES:

Instructions:
List at least three (3) contracts of a similar nature performed by your firm in the last three (3) years. If **NONE**, use your Company's letterhead (and submit with your bid proposal) to list what your qualifications are for this contract. Carson City reserves the right to contact and verify, with any and all references listed, the quality of and the degree of satisfaction for such performance.

Clients: (if additional space is needed attach a separate page)

Company Name 1):
Contract Person:
Mailing Address:
City, State, Zip Code:
Complete Telephone Number:
E-Mail Address:
Project Title:
Amount of Contract:
Scope of Work:
Company Name 2):
Contract Person:
Mailing Address:
City, State, Zip Code:
Complete Telephone Number:
E-Mail Address:
Project Title:
Amount of Contract:
Scope of Work:

BID PROPOSAL

Company Name 3):
Contract Person:
Mailing Address:
City, State, Zip Code:
Complete Telephone Number:
E-Mail Address:
Project Title:
Amount of Contract
Scope of Work:
Company Name 4):
Contract Person:
Mailing Address:
City, State, Zip Code:
Complete Telephone Number:
E-Mail Address:
Project Title:
Amount of Contract:
Scope of Work:

BID PROPOSAL

BP. 9 CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS PRIMARY COVERED TRANSACTIONS

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded by any Federal, State or Local department or agency.

b) Have not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

d) Have not within a three-year period preceding this bid had one or more public transactions (Federal, State or Local) terminated for cause or default.

2. Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this bid.

_____ _____
Signature of Authorized Certifying Official Title

_____ _____
Printed Name Date

I am unable to certify to the above statement. My explanation is attached.

_____ _____
Signature Date

BIDDER'S SAFETY INFORMATION

Bidder's Safety Factors:

Year	"E-Mod" Factor[1]	OSHA Incident Rate[2]
2014		
2013		

[1] E-Mod (Experience Modification) Factors are issued by the Employer's Insurance Company of Nevada.

[2] OSHA Incident Rate is the number of OSHA Recordable Accidents per 100 employees and is calculated as the number of accidents divided by 208,000.

BID PROPOSAL

SUBCONTRACTORS

BP.10 INSTRUCTIONS: for Subcontractors and **General Contractors who self-perform** in amounts **exceeding five (5) percent of bid amount.** This information must be submitted with your bid proposal. The bidder shall enter **NONE** under **Name of Subcontractor** if not utilizing subcontractors exceeding this amount and **per NRS 338.141 the prime contractor shall list itself on the subcontractor's list if it will be providing any of the work on the project.** (This form must be complete in all respects. If, additional space is needed, attach a separate page).

Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		

BID PROPOSAL

SUBCONTRACTORS

BP.11 **INSTRUCTIONS:** for Subcontractors **exceeding one (1) percent of bid amount or $50,000 whichever is greater.** This information must be submitted by the three lowest bidders within two (2) hours after the completion of the opening of the bids. The bidder may elect to submit this information with the bid proposal and, in that case, the bidder will be considered as having submitted this information within the above two hours.

Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		

BID PROPOSAL

SUBCONTRACTORS

BP. 12 **INSTRUCTIONS:** for **all Subcontractors not previously listed** on the 5% and 1% pages. This information must be submitted by the three lowest bidders within twenty four (24) hours after the completion of the opening of the bids. The bidder may elect to submit this information with the bid proposal and, in that case, the bidder will be considered as having submitted this information within the above twenty four hours.

Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		
Name of Subcontractor	Address	
Phone	Nevada Contractor License #	Limit of License
Description of work		

BID PROPOSAL

BP. 13

WORKERS EMPLOYED REPORT
INSTRUCTIONS FOR COMPLETION

Effective July 1, 2013, contractors who receive a preference in bidding on a public work must submit an affidavit to the public body certifying that 50 percent of all workers employed on the public work, including any employees of the contractor and of any subcontractor, will hold a valid driver's license or identification card issued by the Nevada Department of Motor Vehicles. Pursuant to NRS 338.070(4), a contractor and each subcontractor engaged on a public work shall keep an accurate record showing, for each worker employed by the contractor or subcontractor in connection with the public work who has a driver's license or identification card, the name of the worker, the driver's license number or identification card number of the worker, and the state or other jurisdiction that issued the license or card. A copy of this record must be received by the public body no later than 15 days after the end of the month. Additionally, the contractor and any subcontractor will maintain and make available for inspection within Nevada his or her records concerning payroll relating to the public work.

- EACH contractor and subcontractor must complete the Workers Employed Report.
- You may make additional copies of the report as necessary.
- A copy of this report must be submitted with the monthly certified payroll report.
- Submit Identification log monthly listing all employees that worked for that month. The Identification log should correspo9nd with the certified payroll reports. If employees are not working in a given month then they should not be listed on said report.

This report is intended to serve as a cumulative list of all workers employed by the contractor and subcontractor over the duration of the project to verify compliance with the minimum requirements of the affidavit.

BID PROPOSAL

WORKERS EMPLOYED REPORT

Project Name: _____ Contract Number : _____
General Contractor:_____ PWP #_____
Subcontractor: _____ Date:_____
Address at which payroll records are maintained:
_____

Contact Person and Phone Number: _____

Employee Name	Driver License Number or ID Card Number	Issuing State or Jurisdiction

BID PROPOSAL

Local Preference Affidavit

(This form is required to receive a preference in bidding)

I, _____, on behalf of the Contractor, _____, swear and affirm that in order to be in compliance with NRS 338.XXX* and be eligible to receive a preference in bidding on Project No._____, Project Name _____, certify that the following requirement will be adhered to, documented and attained on completion of the contract. Upon submission of this affidavit on behalf of _____, I recognize and accept that failure to comply with any requirements is a material breach of the contract and entitles the City to damages. In addition, the Contractor may lose their preference designation and/or lose their ability to bid on public works for one year, pursuant to NRS 338. XXX*:

1. The Contractor shall ensure that 50 percent of the workers employed on the job possess a Nevada driver's license or identification card;

2. The Contractor shall ensure all vehicles used primarily for the public work will be registered and (where applicable) partially apportioned to Nevada;

3. The Contractor shall ensure at least 50 percent of the design professionals who work on the project (including sub-contractors) have a Nevada driver's license or identification card.

4. The Contractor shall ensure payroll records related to this project are maintained and available within the State of Nevada.

***Note that specific sections of NRS 338 detailing the continued procedures associated with the use of the "bidder's preference" have been amended by the passage of Assembly Bill 172 effective 7/1/13, requiring this affidavit and subsequent record keeping and reporting by the General Contractor using the preference program and awarded this project . These requirements are not applicable to Contractors who do not use the "Bidder's Preference" eligibility certificate in their bid.**

By:_____ Title:_____

Signature:_____ Date:_____

Signed and sworn to (or affirmed) before me on this _____ day of _____, 20_____, by_____ (name of person making statement).

State of _____)
)ss.
County of _____)

_____ STAMP AND SEAL
Notary Signature

BID PROPOSAL

BP.14 ACKNOWLEDGMENT AND EXECUTION:

STATE OF _____)
) SS
COUNTY OF _____)

I _____ (Name of party signing this Bid Proposal), do depose and say: That I am the Bidder or authorized agent of the Bidder; and that I have read and agree to abide by this Bid which includes, but is not limited to the following documents: Notice to Contractors, Table of Contents, Project Coordination, Instructions to Bidders, Bid Bond, Proposal Summary, Contract Award Instructions and Information, Sample Contract, Sample Performance Bond, Sample Labor and Material Payment Bond, General Conditions, Special Conditions, Standard Specifications, Prevailing Wage Rates, Technical Specifications, Geotechnical Report (if any), Contract Drawings, Permits (if any), and any addenda issued and understands the terms, conditions, and requirements thereof; that if his/her bid is accepted that he/she agrees to furnish and deliver all materials except those specified to be furnished by the City (Owner) and to do and perform all work for the "**Carson City Animal Services Facility**", contract number **1415-143**, together with incidental items necessary to complete the work to be constructed in accordance with the Contract Documents, Contract Drawings, and Specifications annexed hereto.

BIDDER:

PRINTED NAME OF BIDDER: _____

TITLE: _____

FIRM: _____

Address: _____

City, State, Zip: _____

Telephone: _____

Fax: _____

E-mail Address: _____

_____
(Signature of Bidder)

DATED: _____

Signed and sworn (or affirmed) before me on this _____day of _____, 2015, by _____.

_____
(Signature of Notary)

(Notary Stamp)

END OF BID PROPOSAL

CONTRACT AWARD

CA.1 NOTICE TO CONTRACTORS:
The Bid, if awarded, will be awarded to the lowest responsive and responsible Bidder based on the Total Base Bid amount, plus or minus any or all Additive or Deductive Alternates, in any combination that is most advantageous to the City. Bidder must bid all items to be responsive and considered for award.

CA.2 METHOD OF AWARD
The Bid, if awarded, will be awarded to the lowest responsive and responsible Bidder based on the Total Base Bid amount, plus or minus any or all Additive or Deductive Alternates, in any combination that is most advantageous to the City. Bidder must bid all items to be responsive and considered for award.

CA.3 TIME OF AWARD
The award, if made, will be within sixty (60) calendar days after the opening of Bids. The City reserves the right to accept or reject any or all Bids received.

CA.4 BONDS

A. Bonds Required
The Contractor agrees that any bonding or guarantee required by this bid shall not be considered as the exclusive remedy of the City for any default in any respect by the Contractor, but such bonding or guarantee shall be considered to be in addition to any right or remedy hereunder or allowed by law, equity, or statute.

A Performance Bond and a Payment Bond, pursuant to the requirements of NRS 339.025, if not otherwise excluded under the threshold stated in NRS 339.025, in the amount of one hundred percent (100%) of the Contract Amount shall be required of the Contractor prior to execution of the Contract and not later than ten (10) calendar days after receipt of the Notice of Award. Said bonds shall remain in full force and effect for a period of not less than one (1) year from the date of Final Acceptance of this Project by the City (Carson City Board of Supervisors or Carson City Regional Transportation Commission). Each of the bonds required must be executed by one or more surety companies authorized to do business in the State of Nevada. Note that individual surety bonds are not acceptable to the City.

B. Bond Forms
The referenced bonds shall be written on the Performance Bond, and Labor and Material Payment Bond forms provided by the City, as shown in the following Construction Contract forms.

The Bidder shall require any resident agent who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of his/her power of attorney.

Any Labor and Material Payment Bond or Performance Bond prepared by a licensed non-resident agent must be countersigned by a resident agent in accordance with the provisions of NRS 680A.300.

The referenced Bonds must be issued by a certified surety listed in the Department of the Treasury, Fiscal Service (Department Circular 570, Current Revision); companies holding certificates of authority as acceptable sureties on federal bonds and as acceptable reinsuring companies.

CA.5 INSURANCE REQUIREMENTS

A. General

Contractor, as an independent contractor and not an employee of the City, must carry policies of insurance in amounts specified and pay all taxes and fees incidental hereto. City shall have no liability except as specified in this Contract.

Contractor shall not commence work before: (1) Contractor has provided the required evidence of insurance to Carson City Purchasing and Contracts, (2) City has approved the insurance policies provided by Contractor, and (3) City has issued the Notice to Proceed.

Contractor shall not allow any subcontractors to commence work on its subcontract until all similar insurance required of the subcontractor has been obtained and verified by Contractor.

CONTRACT AWARD

Prior approval of the insurance policies by City shall be a condition precedent to any payment of consideration under this Contract and City's approval of any changes to insurance coverage during the course of performance shall constitute an ongoing condition subsequent to this Contract. Any failure of City to timely approve shall not constitute a waiver of the condition.

The insurance requirements specified herein do not relieve Contractor of his/her responsibility or limit the amount of his/her liability to the City or other person, and Contractor is encouraged to purchase such additional insurance as he/she deems necessary.

Contractor is responsible for and must remedy all damage or loss to any property, including property of City, caused in whole or in part by Contractor, any subcontractor or anyone employed, directed or supervised by Contractor**.** Contractor is responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work.

City reserves the right to occupy existing facilities under construction or to use or occupy parts of the Work. Insurance policies shall not restrict or limit such use.

Certificate Holder: Each liability insurance policy shall list Carson City c/o Carson City Purchasing and Contracts, 201 North Carson Street, Suite 3, Carson City, Nevada 89701 as a certificate holder.

A. Insurance Coverage

Contractor shall, at Contractor's sole expense, procure, maintain and keep in force for the duration of this Contract the following insurance conforming to the minimum requirements specified below. Unless specifically specified herein or otherwise agreed to by the City, the required insurance shall be in effect prior to the commencement of work by the Contractor and shall continue in force as appropriate until the latter of:

1. Final acceptance by the City of the completion of this Contract; or

2. Such time as the insurance is no longer required by the City under the terms of this Contract

3. Any insurance or self-insured available to the City shall be in excess of and non-contributing with any insurance required from the Contractor. Contractor's insurance policies shall apply on a primary basis. Until such time as the insurance is no longer required by the City, Contractor shall provide the City with renewal or replacement evidence of insurance no less than thirty (30) calendar days before the expiration or replacement of the required insurance. If at any time during the period when insurance is required by this Contract, an insurer or surety fail to comply with the requirements of this Contract, as soon as **CONTRACTOR** has knowledge of any such failure, Contractor shall immediately notify the City and immediately replace such insurance or bond with an insurer meeting the requirements.

B. General Requirements

Certificate Holder: Each liability insurance policy shall list Carson City c/o Carson City Purchasing and Contracts, 201 North Carson Street, Suite 3, Carson City, Nevada 89701, as a certificate holder.

Additionally Insured: By Endorsement to the general liability insurance policy evidence by Contractor, the City and County of Carson City, Nevada, its officers, employees and immune Contractors shall be named as additionally insured's for all liability arising from this contract.

Waiver of Subrogation: Each liability insurance policy shall provide for a waiver of subrogation as to additionally insured's.

Cross Liability: All required liability policies shall provide cross-liability coverage as would be achieved under the standard ISO separation of insured's clause.

Deductibles and Self-Insured Retentions: Insurance maintained by the Contractor shall apply on a first dollar basis without application of a deductible or self-insured retention unless otherwise specifically agreed to by the City. Such approval shall not relieve Contractor from the obligation to pay any deductible or self-insured retention. Any deductible or self-insured retention shall not exceed $5,000.00 per occurrence, unless otherwise approved by the City**.**

Policy Cancellation: Except for ten (10) calendar days notice for non-payment of premium, each insurance policy shall be endorsed to state that: without thirty (30) calendar days prior written notice to Carson City Purchasing and Contracts, the policy shall not be cancelled, non-renewed or coverage and/or limits reduced or materially altered, and shall provide that notices required by this paragraph shall be sent by certified mail to Carson City Purchasing and Contracts, 201 North Carson Street, Suite 3, Carson City, Nevada 89701.

Approved Insurer: Each insurance policy shall be issued by insurance companies authorized to do business in the State of Nevada or eligible surplus line insurers acceptable to the State and having agents in Nevada upon whom service of process may be made, and currently rated by A.M. Best as "A-VII" or better.

Evidence of Insurance: Prior to commencement of work, the Contractor must provide the following documents to Carson City Purchasing and Contracts, 201 North Carson Street, Suite 3, Carson City, Nevada 89701.

Certificate of Insurance: The Acord 25 Certificate of Insurance form or a form substantially similar must be submitted to Carson City Purchasing and Contracts to evidence the insurance policies and coverages required of Contractor.

Additional Insured Endorsement: An additional Insured Endorsement (CG20 10 or CG 20 26), signed by an authorized insurance company representative, must be submitted to Carson City Purchasing and Contracts to evidence the endorsement of **CITY** as an additional insured.

Schedule of Underlying Insurance Policies: If Umbrellas or Excess policy is evidenced to comply with the minimum limits, a copy of the Underlyer Schedule from the Umbrella or Excess insurance policy may be required.

Review and Approval: Documents specified above must be submitted for review and approval by Carson City Purchasing and Contracts prior to the commencement of work by Contractor. Neither approval by the City nor failure to disapprove the insurance furnished by the Contractor shall relieve Contractor or Contractor's full responsibility to provide the insurance required by this Contract. Compliance with the insurance requirements of this Contract shall not limit the liability of Contractor or its subcontractors, employees or agents to City or others, and shall be in addition to and not in lieu of any other remedy available to the City under this Contract or otherwise. Carson City reserves the right to request and review a copy of any required insurance policy or endorsement to assure compliance with these requirements.

C. Commercial General Liability Insurance

Minimum Limits required:

Two Million Dollars ($2,000,000.00) – General Aggregate

Two Million Dollars ($2,000,000.00) – Products and Completed Operations Aggregate

One Million Dollars ($1,000,000.00) – Each Occurrence

Coverage shall be on an occurrence basis and shall be at least as broad as ISO 1996 from CG 00 01 (or a substitute form providing equivalent coverage); and shall cover liability arising from premises, operations, independent Contractors, completed operations, person injury, products, civil lawsuits, Title

VII actions and liability assumed under an insured contract (including the tort liability or another assumed in a business contact).

D. Business Automobile Liability

Minimum Limit required:

On Million Dollars ($1,000,000.00) per occurrence for bodily injury and property damage

Coverage shall be for "any auto" including owned, non-owned and hired vehicles. The policy shall be written on ISO form CA 00 01 or a substitute providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage.

F. Worker's Compensation and Employer's Liability Insurance

CONTRACTOR shall provide workers' compensation insurance as required by Nevada Revised Statutes Chapters 616A through 616D inclusive and Employer's Liability insurance with a minimum limit of $500,000.00 each employee per accident for bodily injury by accident or disease.

CA.6 PENALTY FOR COLLUSION

If at any time, it is found that the Contractor has, in presenting any bid or bids, colluded with any other party or parties, then the Contract shall be null and void, and the Contractor and its sureties shall be liable for loss or damage which the City may suffer thereby, and the City may advertise for new bids for said Work. The Contractor further certifies that any and all prices which he/she may charge under the terms of the Contract do not, and will not; violate any existing Federal, State or Municipal laws or regulations concerning discrimination and/or price fixing.

CA.7 SUCCESSORS AND ASSIGNS

The performance of the Contract may not be assigned. Consent will not be given to any proposed assignment which would relieve the surety of the original Contractor of their responsibilities under the Contract, nor will the City consent to any assignment of a part of the Work under the Contract.

CA.8 RIGHTS AND REMEDIES

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder shall be in addition to, and not a limitation of, any duties, obligations, rights, and remedies otherwise imposed or available by law.

No action or failure to act by the City, the Design Consultant, or the Construction Manager shall constitute a waiver of any right or duty afforded any of them under the Contract, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder, except as may be specifically agreed in writing.

CA.9 COPELAND ANTI-KICKBACK LAW

The Contractor shall comply with the Copeland Anti-Kickback Act (19 U.S.C. 874) as supplemented in the Department of Labor Regulations (29 CFR Part 3). This act provides that each Contractor or subcontractor shall be prohibited from inducing by any means, any person employed in the construction, completion or repair of public work, to give up any part of the compensation to which he/she is otherwise entitled.

CA.10 NOTICE TO PROCEED

Within ten (10) calendar days of receipt of all required post-bid information, including bonds, insurances, and executed Contract, the City will issue the Notice to Proceed.

CA.11 TIME: COMPLETION OF PROJECT

A. Time

The successful Bidder, upon becoming the Contractor after having entered into a Contract with the City, shall commence the Work to be performed under the Contract on the date set by the City in the written Notice to Proceed, continuing the Work in accordance with the approved schedule and shall complete the

entire Work within the number of calendar days stated in the Special Conditions after the date of the Notice to Proceed. Further, separable portions of the Work may be subject to milestone or specific dates as established in the Special Conditions.

The time specified above represents no overtime requirement. Any scheduling of overtime for this Project is solely that of the Contractor, unless specifically directed in writing by the City. The City will not be responsible for any costs related to overtime work performed unless it is specifically directed in writing by the City.

B. Liquidated Damages

In case of failure on the part of the Contractor to complete the Work within the time(s) specified in the Contract, or within such additional time(s) as may be granted by formal action of the City, or the Contractor fails to prosecute the Work, or any separable part thereof, with such diligence as will insure its completion within the time(s) specified in the Contract or any extensions thereof, the Contractor shall pay to the City, as liquidated damages, the sum specified in the Special Conditions for each calendar day for delay until such reasonable time as may be required for final completion of the Work, together with any increased costs incurred by the City in completing the Work.

Time stated for completion shall include the final cleanup and demobilization.

The signing of the Bid Proposal by the Bidder shall be prima facie evidence that the Contractor agrees that the amount of liquidated damages is fair and reasonable.

CA. 12 LIQUIDATED DAMAGES FOR LATE SUBMITTALS AND LAPSE OF INSURANCE

The Contractor shall provide all submittals required by this Contract within fifteen (15) calendar days of the Notice to Proceed. If the Contractor does not provide the submittals on or before the fifteenth (15th) calendar day, he/she will pay to the City the amount of Two Hundred Fifty Dollars ($250) per day as liquidated damages. If the Contractor does not keep the bonds or insurance policies in effect or allows them to lapse, the Contractor will pay to the City the amount of Two Hundred Fifty Dollars ($250) per day as liquidated damages, and will be in breach of Contract.

END OF CONTRACT AWARD

SAMPLE CONTRACT

THIS CONTRACT made and entered into this ____ day of _____, 20__, by and between Carson City, a consolidated municipality, a political subdivision of the State of Nevada, hereinafter referred to as **"CITY"**, and _____, hereinafter referred to as **"CONTRACTOR".**

WITNESSETH:

WHEREAS, the Purchasing and Contracts Administrator for **CITY** is authorized pursuant to Nevada Revised Statutes 338 and Carson City Purchasing Resolution #1990-R71, to approve and accept this Contract as set forth in and by the following provisions; and

WHEREAS, this Contract involves a "public work," which pursuant to NRS 338.010(17) means any project for the new construction, repair or reconstruction of an applicable project financed in whole or in part from public money; and

WHEREAS, **CONTRACTOR'S** compensation under this agreement (does ___) (does not ___) utilize in whole or in part money derived from one or more federal grant funding source(s); and

WHEREAS, it is deemed necessary that the services of **CONTRACTOR** for **CONTRACT No. _____,** titled _____ (hereinafter referred to as "Contract") are both necessary and in the best interest of **CITY**; and

NOW, THEREFORE, in consideration of the aforesaid premises, and the following terms, conditions and other valuable consideration, the parties mutually agree as follows:

1. **REQUIRED APPROVAL:**

This Contract shall not become effective until and unless approved by the Carson City Board of Supervisors.

2. **SCOPE OF WORK (Incorporated Contract Documents):**

2.1 The parties agree that the Scope of Work will be specifically described and hereinafter referred to as the "WORK." This Contract incorporates the following attachments, and a **CONTRACTOR'S** attachment shall not contradict or supersede any **CITY** specifications and/or terms or conditions without written evidence of mutual assent to such change appearing in this Contract:

2.1.1 **CONTRACTOR** agrees that the Contract Documents for Bid No. _____ including, but not limited to, the Notice to Contractors, Table of Contents, Project Coordination, Instructions to Bidders, Contract Award Information, General Conditions, Special Conditions, Technical Specification, Prevailing Wages, Contract Drawings, and Addenda, if any, hereinafter all referred to as **Exhibit A**, are intended to be complete and complementary and are intended to describe a complete WORK. These documents are incorporated herein by reference and made a part of this Contract.

2.1.2 **CONTRACTOR** additionally agrees **CONTRACTOR'S** Bid Bond, Bid Proposal, Proposal Summary, Executed Contract, Performance Bond, Labor and Material Bond, Certificate of Eligibility, Insurance Certificates, Permits, Notice of Award, Notice to Proceed and Executed Change Orders, hereinafter all referred to as **Exhibit B**, are incorporated herein and made a part of this Contract.

For P&C Use Only	
CCBL expires	_____
NVCL expires	_____
GL expires	_____
AL expires	_____
WC expires	_____

SAMPLE CONTRACT

2.2 The attached incorporated General Conditions ("GC") document provides in Section GC 1.3 a "Governing Order of Bidding and Contract Documents," which shall be applicable to this Contract.

1. CONTRACT TERM AND LIQUIDATED DAMAGES:

3.1 **CONTRACTOR** agrees to complete the WORK on or before the date specified in the Notice to Proceed or any executed Change Orders to the entire satisfaction of **CITY** before final payment is made, unless sooner termination by either party as specified in **Section 6** (CONTRACT TERMINATION) and the General Conditions, Section GC 3.18.

3.2 Pursuant to the provisions under Time for Completion and Liquidated Damages in the Contract Documents of said Specifications, **CONTRACTOR** will complete the WORK within the Contract time. Since **CITY** and **CONTRACTOR** agree it is difficult to ascertain the actual amount of damages incurred due to delay of the Project, it is agreed that **CITY** will be paid the liquidated damages as specified in the Contract Special Conditions for each and every calendar day of delay in the completion of the WORK, in addition to any direct charges incurred by **CITY** as a result of delay of the Project, including engineering fees and additional damages due to late construction. **CITY** also reserves the right to deduct any amounts due **CITY** from any monies earned by **CONTRACTOR** under this Contract.

3.3 That in the performance of this Contract, **CONTRACTOR** and any subcontractors, as employers, shall pay 1 ½ times an employee's regular wage rate whenever an employee who received compensation for employment at a rate less than 1 ½ time the minimum wage who works more than forty (40) hours in any scheduled work week, more than eight (8) hours in a day, unless by mutual agreement the employee works a scheduled ten (10) hours per day for four (4) calendar days within a work week. Employers should refer to NRS 608.018, NRS 338.020 and A.O. 2013-04 for further details on overtime requirements.

2. NOTICE:

4.1 Except the bid and award process where notices may be limited to postings by **CITY** on its Finance Department/Bid Opportunities website (www.carson.org), all notices or other communications required or permitted to be given under this Contract shall be in writing and shall be deemed to have been duly given if delivered personally in hand, by e-mail, by regular mail, by telephonic facsimile with simultaneous regular mail, or by certified mail, return receipt requested, postage prepaid on the date posted, and addressed to the other party at the address specified below.

4.2 Notice to **CONTRACTOR** shall be addressed to:

_____
_____
_____
email:_____

4.3 Notice to **CITY** shall be addressed to:

Carson City Purchasing and Contracts
Laura Tadman
201 North Carson Street, Suite 3
Carson City, NV 89701
775-283-7137 / FAX 775-887-2107
LTadman@carson.org

1. COMPENSATION:

5.1 The parties agree that **CONTRACTOR** will provide the WORK specified in the Contract for the Contract Amount of _____Dollars and ___/100 ($_____).

5.2 **CITY** will pay **CONTRACTOR** progress payments and the final payment computed from the actual quantities of WORK performed and accepted and the materials furnished at the Unit and Lump Sum prices shown on **CONTRACTOR'S** Bid Proposal and any executed Change Orders.

5.3 Contract Amount represents full and adequate compensation for the complete WORK, and includes the furnishing of all materials, all labor, equipment, tools, transportation, services, appliances, and all expenses, direct or indirect connected with the proper execution of the WORK.

5.4 **CITY** does not agree to reimburse **CONTRACTOR** for expenses unless otherwise specified.

2. CONTRACT TERMINATION:

6.1 Termination Without Cause:

6.1.1 Any discretionary or vested right of renewal notwithstanding, this Contract may be terminated upon written notice by mutual consent of both parties or unilaterally by either party without cause.

6.1.2 **CITY** reserves the right to terminate this Contract for convenience whenever it considers termination, in its sole and unfettered discretion, to be in the public interest. In the event that the Contract is terminated in this manner, payment will be made for WORK actually completed. If termination occurs under this provision, in no event shall **CONTRACTOR** be entitled to anticipated profits on items of WORK not performed as of the effective date of the termination or compensation for any other item, including but not limited to, unabsorbed overhead. **CONTRACTOR** shall require that all subcontracts which he/she enters related to this Contract likewise contain a termination for convenience clause which precludes the ability of any subcontractor to make claims against **CONTRACTOR** for damages, due to breach of contract, of lost profit on items of WORK not performed or of unabsorbed overhead, in the event of a convenience termination.

6.2 Termination for Nonappropriation:

6.2.1 All payments and WORK provided under this Contract are contingent upon the availability of the necessary public funding, which may include various internal and external sources. In the event that Carson City does not acquire and appropriate the funding necessary to perform in accordance with the terms of the Contract, the Contract shall automatically terminate upon **CITY'S** notice to **CONTRACTOR** of such nonappropriation, and no claim or cause of action may be based upon any such nonappropriation.

6.3 Cause Termination for Default or Breach:

6.3.1 A default or breach may be declared with or without termination.

6.3.2 This Contract may be terminated by either party upon written notice of default or breach to the other party as follows:

6.3.2.1 If **CONTRACTOR** fails to provide or satisfactorily perform any of the conditions, WORK, deliverables, goods, or any services called for by this Contract within the time requirements specified in this Contract or within any granted extension of those time requirements; or

6.3.2.2 If any state, county, city or federal license, authorization, waiver, permit, qualification or certification required by statute, ordinance, law, or regulation to be held by **CONTRACTOR** to provide the goods or WORK or any services required by this Contract is for any reason denied, revoked, debarred, excluded, terminated, suspended, lapsed, or not renewed; or

6.3.2.3 If **CONTRACTOR** becomes insolvent, subject to receivership, or becomes voluntarily or involuntarily subject to the jurisdiction of the bankruptcy court; or

6.3.2.4 If **CITY** materially breaches any material duty under this Contract and any such breach impairs **CONTRACTOR'S** ability to perform; or

6.3.2.5 If it is found by **CITY** that any quid pro quo or gratuities in the form of money, services, entertainment, gifts, or otherwise were offered or given by **CONTRACTOR**, or any agent or representative of **CONTRACTOR**, to any officer or employee of **CITY** with a view toward securing a contract or securing favorable treatment with respect to awarding, extending, amending, or making any determination with respect to the performing of such contract; or

6.3.2.6 If it is found by **CITY** that **CONTRACTOR** has failed to disclose any material conflict of interest relative to the performance of this Contract.

6.3.2.7 **CITY** may terminate this Contract if **CONTRACTOR**:

6.3.2.7.1 Fails to maintain bonding, Nevada State Contractors' Board License, State Industrial Insurance requirements or insurance policies for limits as defined in this Contract; or

6.3.2.7.2 Persistently or materially refuses or fails to supply properly skilled workers or proper materials; or

6.3.2.7.3 Fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between **CONTRACTOR** and the subcontractors; or

6.3.2.7.4 Disregards laws, ordinances, or rules, regulations or order of a public authority having jurisdiction; or

6.3.2.7.5 Otherwise makes a material breach of a provision of this Contract; or

6.3.2.7.6 **CONTRACTOR** fails to maintain safe working conditions.

6.3.3 When any of the **Subsection 6.3.2.7.1 through 6.3.2.7.6, inclusive**, cause reasons exist, and without prejudice to any other rights or remedies of **CITY, CITY** may terminate this Contract at any time after giving **CONTRACTOR** and **CONTRACTOR'S** Surety seven (7) calendar days written notice of default or breach and intent to terminate and **CONTRACTOR'S** subsequent failure to timely correct as provided below, and subject to any prior rights of the Surety, **CITY** may:

6.3.3.1 Take possession of the site and of all materials, equipment, tools and construction equipment and machinery thereon owned by **CONTRACTOR**;

6.3.3.2 Accept assignment of subcontractors pursuant to this Contract (Contingent Assignment of Subcontracts to Carson City if this Contract is terminated); and

6.3.3.3 Finish the WORK by whatever reasonable method **CITY** may deem expedient.

6.3.4 If **CITY** terminates this Contract for any of the cause reasons stated in **Section 6.3**:

6.3.4.1 **CONTRACTOR** shall not be entitled to receive further payment until the WORK is finished.

6.3.4.2 If the unpaid balance of the Contract Amount exceeds the cost of finishing the WORK including expenses made necessary thereby, such excess shall be paid to **CONTRACTOR**. If the costs of finishing the WORK exceed the unpaid balance, **CONTRACTOR** shall pay the difference to **CITY**. The amount to be paid to **CONTRACTOR** or **CITY**, as the case may be, shall survive termination of this Contract.

6.3.4.3 In the event of such cause termination, all monies due **CONTRACTOR** or retained under the terms of this Contract shall be held by **CITY**, however, such holdings will not release **CONTRACTOR** or its Sureties from liability for failure to fulfill this Contract. Any excess cost over and above the Contract Amount incurred by **CITY** arising from the termination of the operations of this Contract and the completion of the WORK by **CITY** as provided above shall be paid for by any available funds held by **CITY**. **CONTRACTOR** will be so credited with any surplus remaining after all just claims for such completion have been paid.

6.4 If at any time before completion of the WORK under this Contract, the WORK shall be stopped by an injunction of a court of competent jurisdiction or by order of any competent government authority, **CITY** may give immediate notice to **CONTRACTOR** to discontinue the WORK and terminate this Contract. **CONTRACTOR** shall discontinue the WORK in such manner, sequence, and at such times as **CITY** may direct. **CONTRACTOR** shall have no claim for damages for such discontinuance or termination, nor any claim for anticipated profits on the WORK thus dispensed with, nor for any claim for penalty, nor for any other claim such as unabsorbed overhead, except for the WORK actually performed up to the time of discontinuance, including any extra WORK ordered by **CITY** to be done.

6.5 Time to Correct (Declared Default or Breach):

6.5.1 Termination upon a declared default or breach may be exercised only after providing 7 (seven) calendar days written notice of default or breach, and the subsequent failure of the defaulting or breaching party, within five (5) calendar days of providing that default or breach notice, to provide evidence satisfactory to the aggrieved party demonstrating that the declared default or breach has been corrected. Time to correct shall run concurrently with any notice of default or breach and such time to correct is not subject to any stay with respect to the nonexistence of any Notice of Termination. Untimely correction shall not void the right to termination otherwise properly noticed unless waiver of the noticed default or breach is expressly provided in writing by the aggrieved party. There shall be no time to correct with respect to any notice of termination without cause, termination for nonappropriation or termination due to court injunction or order of a competent government authority.

6.6 Winding Up Affairs Upon Termination:

6.6.1 In the event of termination of this Contract for any reason, the parties agree that the provisions of this **Subsection 6.6** survive termination:

6.6.1.1 The parties shall account for and properly present to each other all claims for fees and expenses and pay those which are undisputed and otherwise not subject to set off under this Contract. Neither party may withhold performance of winding up provisions solely based on nonpayment of fees or expenses accrued up to the time of termination; and

6.6.1.2 **CONTRACTOR** shall satisfactorily complete WORK in progress at the agreed rate (or a pro rata basis if necessary) if so requested by **CITY**; and

6.6.1.3 **CONTRACTOR** shall execute any documents and take any actions necessary to effectuate an assignment of this Contract if so requested by **CITY**; and

6.6.1.4 **CONTRACTOR** shall preserve, protect, and promptly deliver into **CITY** possession all proprietary information in accordance with City Ownership of Proprietary Information.

6.7 Notice of Termination:

6.7.1 Unless otherwise specified in this Contract, termination shall not be effective until seven (7) calendar days after a party has provided written notice of default or breach, or notice of without cause termination. Notice of Termination may be given at the time of notice of default or breach, or notice of without cause termination. Notice of Termination may be provided separately at any time after the running of the 7-day notice period, and such termination shall be effective on the date the Notice of Termination is provided to the party unless a specific effective date is otherwise set forth therein. Any delay in providing a Notice of Termination after the 7-day notice period has run without a timely correction by the defaulting or breaching party shall not constitute any waiver of the right to terminate under the existing notice(s).

7. DAVIS-BACON & RELATED ACTS 29 CFR PARTS 1,3,5,6,&7 AND NRS 338.070(5):

7.1 **CONTRACTOR** shall comply with Davis-Bacon Act and NRS 338.070(5). **CONTRACTOR** and each covered contractor or subcontractor must provide a weekly statement of wages paid to each of its employees engaged in covered WORK. The statement shall be executed by **CONTRACTOR** or subcontractor or by an authorized officer or employee of **CONTRACTOR** or subcontractor who supervised the payment of wages and shall be on the "Statement of Compliance" form. **CONTRACTOR** shall submit a Statement of Compliance that is prescribed by the Nevada Labor Commissioner or contains identical wording. Per NRS 338.070(6) the records maintained pursuant to subsection 5 must be open at all reasonable hours to the inspection of the public body (the **CITY'S** representative) awarding the contract. The **CONTRACTOR** engaged on the public work or

subcontractor engaged on the public work shall ensure that a copy of each record for each calendar month is received by the public body awarding the contract (the **City**) **no later than 15 days after the end of the month**.

7.2 In the event federal funds are used for payment of all or part of this Contract, **CONTRACTOR** shall submit a Statement of Compliance form WH347 or a form with identical wording and a Statement of Compliance prescribed by the Nevada Labor Commissioner **within 7 days after the regular pay date for the**

pay period. The original Statements shall be delivered to Carson City Public Works, 3505 Butti Way, Carson City, Nevada 89703, attention Davis-Bacon/Federal Funding Compliance.

7.3 CERTIFIED PAYROLLS FOR DAVIS-BACON AND PREVAILING WAGE PROJECTS:

7.3.1 The higher of the Federal or local prevailing wage rates for **CITY**, as established by the Nevada Labor Commission and the Davis-Bacon Act, shall be paid for all classifications of labor on this project WORK. Should a classification be missing from the Davis-Bacon rates the **CONTRACTOR** shall complete a request of authorization for additional classification or rate form SF1444 in its entirety and submit it to the **CITY** for approval and submission to the U.S. Department of Labor. Also, in accordance with NRS 338, the hourly and daily wage rates for the State and Davis-Bacon must be posted at the work site by **CONTRACTOR**. **CONTRACTOR** shall ensure that a copy of **CONTRACTOR'S** and subcontractor's certified payrolls for each calendar week are received by **CITY**.

7.3.2 Per NRS 338.070(5) a **CONTRACTOR** engaged on a public work and each subcontractor engaged on the public work shall keep or cause to be kept:

(a) An accurate record showing, for each worker employed by the contractor or subcontractor in connection with the public work:
(1) The name of the worker;
(2) The occupation of the worker;
(3) The gender of the worker, if the worker voluntarily agreed to specify that information pursuant to subsection 4, or an entry indicating that the worker declined to specify such information;
(4) The ethnicity of the worker, if the worker voluntarily agreed to specify that information pursuant to subsection 4, or an entry indicating that the worker declined to specify such information;
(5) If the worker has a driver's license or identification card, an indication of the state or other jurisdiction that issued the license or card; and
(6) The actual per diem, wages and benefits paid to the worker; and
(b) An additional accurate record showing, for each worker employed by the contractor or subcontractor in connection with the public work who has a driver's license or identification card:
(1) The name of the worker;
(2) The driver's license number or identification card number of the worker; and
(3) The state or other jurisdiction that issued the license or card.

7.3.3 The original payroll records shall be certified and shall be submitted weekly to Carson City Public Works, 3505 Butti Way, Carson City, Nevada 89703, attention Davis-Bacon/Federal Funding Compliance. Submission of such certified payrolls shall be a condition precedent for processing the monthly progress payment. **CONTRACTOR**, as General Contractor, shall collect the wage reports from the subcontractors and ensure the receipt of a certified copy of each weekly payroll for submission to **CITY** as one complete package.

7.3.4 Pursuant to NRS 338.060 and 338.070, **CONTRACTOR** hereby agrees to forfeit, as a penalty to **CITY**, not less than Twenty Dollars ($20) nor more than Fifty Dollars ($50) for each calendar day or portion thereof that each worker employed on the Contract is paid less than the designated rate for any WORK done under the Contract, by **CONTRACTOR** or any subcontractor under him/her, or is not reported to **CITY** as required by NRS 338.070.

8. FAIR EMPLOYMENT PRACTICES:

8.1 Pursuant to NRS 338.125, Fair Employment Practices, the following provisions must be included in any contract between **CONTRACTOR** and a public body such as **CITY**:

8.1.1 ***In connection with the performance of work under this Contract, CONTRACTOR agrees not to discriminate against any employee or applicant for employment because of race, creed, color, national origin, sex, sexual orientation, gender identity, or age, including, without limitation, with regard to employment, upgrading, demotion or transfer, recruitment or recruitment advertising, layoff or termination, rates of pay or other forms of compensation, and selection for training, including without limitation, apprenticeship.***

8.1.2 **CONTRACTOR** further agrees to insert this provision in all subcontracts hereunder, except subcontracts for standard commercial supplies or raw materials.

9. PREFERENTIAL EMPLOYMENT:

9.1 Unless, and except if, this Contract is funded in whole or in part by federal grant funding (*see* 40 C.F.R. § 31.36(c) *Competition)*, pursuant to Nevada Revised Statute 338.130, in all cases where persons are employed in the construction of public works, preference must be given, the qualifications of the applicants being equal: (1) First: To persons who have been honorably discharged from the Army, Navy, Air Force, Marine Corps or Coast Guard of the United States, a reserve component thereof or the National Guard; and are citizens of the State of Nevada. (2) Second: To other citizens of the State of Nevada.

9.2 Unless, and except if, this Contract is funded in whole or in part by federal grant funding (*see* 40 CFR § 31.36(c) *Competition)*, in connection with the performance of WORK under this Contract, **CONTRACTOR** agrees to comply with the provisions of Nevada Revised Statute 338.130 requiring certain preferences to be given to which persons are employed in the construction of a public work. If **CONTRACTOR** fails to comply with the provisions of Nevada Revised Statute 338.130, pursuant to the terms of Nevada Revised Statute 338.130(3), this Contract is void, and any failure or refusal to comply with any of the provisions of this section renders this Contract void.

10. REMEDIES:
Except as otherwise provided for by law or this Contract, the rights and remedies of the parties shall not be exclusive and are in addition to any other rights and remedies provided by law or equity, including, without limitation, actual damages, and to a prevailing party reasonable attorney's fees and costs. The parties agree that, in the event a lawsuit is filed and a party is awarded attorney's fees by the court, for any reason, the amount of recoverable attorney's fees shall not exceed the rate of $125 per hour. **CITY** may set off consideration against any unpaid obligation of **CONTRACTOR** to **CITY**.

11. LIMITED LIABILITY:
CITY will not waive and intends to assert available Nevada Revised Statutes Chapter 41 liability limitations in all cases. Contract liability of both parties shall not be subject to punitive damages. Liquidated damages shall not apply unless otherwise expressly provided for elsewhere in this Contract. Damages for any **CITY** breach shall never exceed the amount of funds appropriated for payment under this Contract, but not yet paid to **CONTRACTOR**, for the fiscal year budget in existence at the time of the breach. **CONTRACTOR'S** tort liability shall not be limited.

12. FORCE MAJEURE:
Neither party shall be deemed to be in violation of this Contract if it is prevented from performing any of its obligations hereunder due to strikes, failure of public transportation, civil or military authority, act of public enemy, accidents, fires, explosions, or acts of God, including, without limitation, earthquakes, floods, winds, or storms. In such an event the intervening cause must not be through the fault of the party asserting such an excuse, and the excused party is obligated to promptly perform in accordance with the terms of this Contract after the intervening cause ceases.

13. INDEMNIFICATION:

13.1 To the extent permitted by law, including, but not limited to, the provisions of Nevada Revised Statutes Chapter 41, each party shall indemnify, hold harmless and defend, not excluding the other's right to participate, the other party from and against all liability, claims, actions, damages, losses, and

expenses, including but not limited to reasonable attorney's fees and costs, arising out of any alleged negligent or willful acts or omissions of the indemnifying party, its officers, employees and agents. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of the indemnity which would otherwise exist as to any party or person described in this Section.

13.2 Except as otherwise provided in **Subsection 13.4** below, the indemnifying party shall not be obligated to provide a legal defense to the indemnified party, nor reimburse the indemnified party for the same, for any period occurring before the indemnified party provides written notice of the pending claim(s) or cause(s) of action to the indemnifying party, along with:
13.2.1 a written request for a legal defense for such pending claim(s) or cause(s) of action; and

13.2.2 a detailed explanation of the basis upon which the indemnified party believes that the claim or cause of action asserted against the indemnified party implicates the culpable conduct of the indemnifying party, its officers, employees, and/or agents.
13.3 After the indemnifying party has begun to provide a legal defense for the indemnified party, the indemnifying party shall not be obligated to fund or reimburse any fees or costs provided by any additional counsel for the indemnified party, including counsel through which the indemnified party might voluntarily choose to participate in its defense of the same matter.
13.4 After the indemnifying party has begun to provide a legal defense for the indemnified party, the indemnifying party shall be obligated to reimburse the reasonable attorney's fees and costs incurred by the indemnified party during the initial thirty (30) day period of the claim or cause of action, if any, incurred by separate counsel.

14. INDEPENDENT CONTRACTOR:
14.1 **CONTRACTOR**, as an independent contractor, is a natural person, firm or corporation who agrees to perform WORK for a fixed price according to his or its own methods and without subjection to the supervision or control of the **CITY**, except as to the results of the WORK, and not as to the means by which the WORK are accomplished.
14.2 It is mutually agreed that **CONTRACTOR** is associated with **CITY** only for the purposes and to the extent specified in this Contract, and in respect to performance of the contracted WORK pursuant to this Contract. **CONTRACTOR** is and shall be an independent contractor and, subject only to the terms of this Contract, shall have the sole right to supervise, manage, operate, control, and direct performance of the details incident to its duties under this Contract.
14.3 Nothing contained in this Contract shall be deemed or construed to create a partnership or joint venture, to create relationships of an employer-employee or principal-agent, or to otherwise create any liability for **CITY** whatsoever with respect to the indebtedness, liabilities, and obligations of **CONTRACTOR** or any other party.
14.4 **CONTRACTOR**, in addition to **Section 13** (INDEMNIFICATION), shall indemnify and hold **CITY** harmless from, and defend **CITY** against, any and all losses, damages, claims, costs, penalties, liabilities, expenses arising out of or incurred in any way because of, but not limited to, **CONTRACTOR'S** obligations or legal duties regarding any taxes, fees, assessments, benefits, entitlements, notice of benefits, employee's eligibility to work, to any third party, subcontractor, employee, state, local or federal governmental entity.
14.5 Neither **CONTRACTOR** nor its employees, agents, or representatives shall be considered employees, agents, or representatives of **CITY**.

15. INSURANCE REQUIREMENTS (GENERAL):
15.1 ***NOTICE: The following general insurance requirements shall apply unless these general requirements are altered by the specific requirements set forth in CITY'S solicitation for bid document, the adopted bid or other document incorporated into this Contract by the parties.***

These general insurance requirements do not include terms related to bond(s) required for this Contract, which are set forth in the CITY'S solicitation and below in this Contract following the execution pages.
15.2 **CONTRACTOR**, as an independent contractor and not an employee of **CITY**, must carry policies of insurance in amounts specified and pay all taxes and fees incident hereunto. **CITY** shall have no liability except as specifically provided in this Contract.
15.3 **CONTRACTOR** shall not commence work before: (1) **CONTRACTOR** has provided the required evidence of insurance to **CITY** Purchasing and Contracts, and (2) **CITY** has approved the insurance policies provided by **CONTRACTOR**.
15.4 Prior approval of the insurance policies by **CITY** shall be a condition precedent to any payment of consideration under this Contract and **CITY'S** approval of any changes to insurance coverage during the course of performance shall constitute an ongoing condition subsequent this Contract. Any failure of **CITY** to timely approve shall not constitute a waiver of the condition.
15.5 *Insurance Coverage (15.6 through 15.23)*:
15.6 **CONTRACTOR** shall, at **CONTRACTOR'S** sole expense, procure, maintain and keep in force for the duration of this Contract the following insurance conforming to the minimum requirements specified below. Unless specifically specified herein or otherwise agreed to by **CITY**, the required insurance shall be in effect prior to the commencement of work by **CONTRACTOR** and shall continue in force as appropriate until the latter of:
15.6.1 Final acceptance by **CITY** of the completion of this Contract; or
15.6.2 Such time as the insurance is no longer required by **CITY** under the terms of this Contract.
15.6.3 Any insurance or self-insurance available to **CITY** under its coverage(s) shall be in excess of and non-contributing with any insurance required from **CONTRACTOR. CONTRACTOR'S** insurance policies shall apply

on a primary basis. Until such time as the insurance is no longer required by **CITY**, **CONTRACTOR** shall provide **CITY** with renewal or replacement evidence of insurance no less than thirty (30) calendar days before the expiration or replacement of the required insurance. If at any time during the period when insurance is required by this Contract, an insurer or surety shall fail to comply with the requirements of this Contract, as soon as **CONTRACTOR** has knowledge of any such failure, **CONTRACTOR** shall immediately notify **CITY** and immediately replace such insurance or bond with an insurer meeting the requirements.

15.7 *General Insurance Requirements (15.8 through 15.23*:

15.8 **Certificate Holder:** Each liability insurance policy shall list Carson City c/o Carson City Purchasing and Contracts, 201 N. Carson Street, Suite 3, Carson City, NV 89701 as a certificate holder.

15.9 **Additional Insured:** By endorsement to the general liability insurance policy evidenced by **CONTRACTOR**, The City and County of Carson City, Nevada, its officers, employees and immune contractors shall be named as additional insureds for all liability arising from this Contract.

15.10 **Waiver of Subrogation**: Each liability insurance policy shall provide for a waiver of subrogation as to additional insureds.

15.11 **Cross-Liability**: All required liability policies shall provide cross-liability coverage as would be achieved under the standard ISO separation of insureds clause.

15.12 **Deductibles and Self-Insured Retentions**: Insurance maintained by **CONTRACTOR** shall apply on a first dollar basis without application of a deductible or self-insured retention unless otherwise specifically agreed to by **CITY**. Such approval shall not relieve **CONTRACTOR** from the obligation to pay any deductible or self-insured retention. Any deductible or self-insured retention shall not exceed $5,000.00 per occurrence, unless otherwise approved by **CITY**.

15.13 **Policy Cancellation**: Except for ten (10) calendar days notice for non-payment of premium, each insurance policy shall be endorsed to state that; without thirty (30) calendar days prior written notice to Carson City Purchasing and Contracts, the policy shall not be canceled, non-renewed or coverage and /or limits reduced or materially altered, and shall provide that notices required by this paragraph shall be sent by mail to Carson City Purchasing and Contracts, 201 N. Carson Street, Suite 3, Carson City, NV 89701.

15.14 **Approved Insurer**: Each insurance policy shall be issued by insurance companies authorized to do business in the State of Nevada or eligible surplus lines insurers acceptable to the State and having agents in Nevada upon whom service of process may be made, and currently rated by A.M. Best as "A-VII" or better.

15.15 **Evidence of Insurance:** Prior to commencement of work, **CONTRACTOR** must provide the following documents to Carson City Purchasing and Contracts, 201 North Carson Street, Suite 3, Carson City, NV 89701:

15.16 **Certificate of Insurance:** The Acord 25 Certificate of Insurance form or a form substantially similar must be submitted to Carson City Purchasing and Contracts to evidence the insurance policies and coverages required of **CONTRACTOR**.

15.17 **Additional Insured Endorsement:** An Additional Insured Endorsement (CG20 10 or C20 26), signed by an authorized insurance company representative, must be submitted to Carson City Purchasing and Contracts to evidence the endorsement of **CITY** as an additional insured per **Subsection 15.9** (Additional Insured).

15.18 **Schedule of Underlying Insurance Policies:** If Umbrella or Excess policy is evidenced to comply with minimum limits, a copy of the Underlyer Schedule from the Umbrella or Excess insurance policy may be required.

15.19 **Review and Approval:** Documents specified above must be submitted for review and approval by **CITY** Purchasing and Contracts prior to the commencement of work by **CONTRACTOR**. Neither approval by **CITY** nor failure to disapprove the insurance furnished by **CONTRACTOR** shall relieve **CONTRACTOR** of **CONTRACTOR'S** full responsibility to provide the insurance required by this Contract. Compliance with the insurance requirements of this Contract shall not limit the liability of **CONTRACTOR** or its sub-contractors, employees or agents to **CITY** or others, and shall be in addition to and not in lieu of any other remedy available to **CITY** under this Contract or otherwise. **CITY** reserves the right to request and review a copy of any required insurance policy or endorsement to assure compliance with these requirements.

15.20 **COMMERCIAL GENERAL LIABILITY INSURANCE**:

15.20.1 *Minimum Limits required*:

15.20.2 Two Million Dollars ($2,000,000.00) - General Aggregate.

15.20.3 Two Million Dollars ($2,000,000.00) - Products & Completed Operations. Aggregate

15.20.4 One Million Dollars ($1,000,000.00) - Each Occurrence.

15.20.5 Coverage shall be on an occurrence basis and shall be at least as broad as ISO 1996 form CG 00 01 (or a substitute form providing equivalent coverage); and shall cover liability arising from premises, operations, independent contractors, completed operations, personal injury, products, civil lawsuits, Title VII actions and liability assumed under an insured contract (including the tort liability of another assumed in a business contract).

15.21 **BUSINESS AUTOMOBILE LIABILITY INSURANCE:**
15.21.1 *Minimum Limit required*:
15.21.2 One Million Dollars ($1,000,000.00) per occurrence for bodily injury and property damage.
15.21.3 Coverage shall be for "any auto", including owned, non-owned and hired vehicles. The policy shall be written on ISO form CA 00 01 or a substitute providing equivalent liability coverage. If necessary, the policy shall be endorsed to provide contractual liability coverage.

15.22 **PROFESSIONAL LIABILITY INSURANCE (Architects, Engineers and Land Surveyors)**
15.22.1 *Minimum Limit required*:
15.22.2 One Million Dollars ($1,000,000.00).
15.22.3 Retroactive date: Prior to commencement of the performance of this Contract.
15.22.4 Discovery period: Three (3) years after termination date of this Contract.
15.22.5 A certified copy of this policy may be required.

15.23 **WORKERS' COMPENSATION AND EMPLOYER'S LIABILITY INSURANCE:**
15.23.1 **CONTRACTOR** shall provide workers' compensation insurance as required by Nevada Revised Statutes Chapters 616A through 616D inclusive and Employer's Liability insurance with a minimum limit of $500,000.00 each employee per accident for bodily injury by accident or disease.
15.23.2 **CONTRACTOR** may, in lieu of furnishing a certificate of an insurer, provide an affidavit indicating that **CONTRACTOR** is a sole proprietor; that **CONTRACTOR** will not use the services of any employees in the performance of this Contract; that **CONTRACTOR** has elected to not be included in the terms, conditions, and provisions of Nevada Revised Statutes Chapters 616A-616D, inclusive; and that **CONTRACTOR** is otherwise in compliance with the terms, conditions, and provisions of Nevada Revised Statutes Chapters 616A-616D, inclusive.

16. BUSINESS LICENSE:
16.1 **CONTRACTOR** shall not commence work before **CONTRACTOR** has provided a copy of his Carson City business license to Carson City Purchasing and Contracts.
16.2 The Carson City business license shall continue in force until the latter of: (1) final acceptance by **CITY** of the completion of this Contract; or (2) such time as the Carson City business license is no longer required by **CITY** under the terms of this Contract.

17. COMPLIANCE WITH LEGAL OBLIGATIONS:
CONTRACTOR shall procure and maintain for the duration of this Contract any state, county, city, or federal license, authorization, waiver, permit, qualification or certification required by statute, ordinance, law, or regulation to be held by **CONTRACTOR** to provide the goods or WORK or any services of this Contract. **CONTRACTOR** will be responsible to pay all government obligations, including, but not limited to, all taxes, assessments, fees, fines, judgments, premiums, permits, and licenses required or imposed by law or a court. Real property and personal property taxes are the responsibility of **CONTRACTOR** in accordance with Nevada Revised Statutes Chapter 361 generally and NRS 361.157 and 361.159, specifically regarding for profit activity. **CONTRACTOR** agrees to be responsible for payment of any such government obligations not paid by its subcontractors during performance of this Contract. **CITY** may set-off against consideration due any delinquent government obligation.

18. WAIVER OF BREACH:
Failure to declare a breach or the actual waiver of any particular breach of this Contract or its material or nonmaterial terms by either party shall not operate as a waiver by such party of any of its rights or remedies as to any other breach.

19. SEVERABILITY:
If any provision contained in this Contract is held to be unenforceable by a court of law or equity, this Contract shall be construed as if such provision did not exist and the nonenforceability of such provision shall not be held to render any other provision or provisions of this Contract unenforceable.
20. ASSIGNMENT / DELEGATION:
To the extent that any assignment of any right under this Contract changes the duty of either party, increases the burden or risk involved, impairs the chances of obtaining the performance of this Contract, attempts to operate as a novation, or includes a waiver or abrogation of any defense to payment by **CITY,** such offending portion of the assignment shall be void, and shall be a breach of this Contract. **CONTRACTOR** shall neither assign, transfer nor delegate any rights, obligations or duties under this Contract without the prior written approval of **CITY**. The

parties do not intend to benefit any third party beneficiary regarding their respective performance under this Contract.

21. CITY OWNERSHIP OF PROPRIETARY INFORMATION:

21.1 Any files, reports, histories, studies, tests, manuals, instructions, photographs, negatives, blue prints, plans, maps, data, system designs, computer programs, computer codes, and computer records (which are intended to be consideration under this Contract), or any other documents or drawings, prepared or in the course of preparation by **CONTRACTOR** (or its subcontractors) in performance of its obligations under this Contract shall be the exclusive property of **CITY** and all such materials shall be delivered into **CITY** possession by **CONTRACTOR** upon completion, termination, or cancellation of this Contract. **CONTRACTOR** shall not use, willingly allow, or cause to have such materials used for any purpose other than performance of **CONTRACTOR'S** obligations under this Contract without the prior written consent of **CITY**. Notwithstanding the foregoing, **CITY** shall have no proprietary interest in any materials licensed for use by **CITY** that are subject to patent, trademark or copyright protection.

21.2 **CITY** shall be permitted to retain copies, including reproducible copies, of **CONTRACTOR'S** drawings, specifications, and other documents for information and reference in connection with this Contract.

21.3 **CONTRACTOR'S** drawings, specifications and other documents shall not be used by **CITY** or others without expressed permission of **CONTRACTOR**.

22. PUBLIC RECORDS:

Pursuant to Nevada Revised Statute 239.010, information or documents received from **CONTRACTOR** may be open to public inspection and copying. **CITY** will have the duty to disclose unless a particular record is made confidential by law or a common law balancing of interests. **CONTRACTOR** may clearly label specific parts of an individual document as a "trade secret" or "confidential" in accordance with Nevada Revised Statute 332.061, provided that **CONTRACTOR** thereby agrees to indemnify and defend **CITY** for honoring such a designation. The failure to so label any document that is released by **CITY** shall constitute a complete waiver of any and all claims for damages caused by any release of the records.

23. CONFIDENTIALITY:

CONTRACTOR shall keep confidential all information, in whatever form, produced, prepared, observed or received by **CONTRACTOR** to the extent that such information is confidential by law or otherwise required by this Contract.

24. FEDERAL FUNDING:

24.1 *In the event federal grant funds are used for payment of all or part of this Contract*:

24.1.1 **CONTRACTOR** certifies, by signing this Contract, 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. 19160-19211), and any relevant program-specific regulations. This provision shall be required of every subcontractor receiving any payment in whole or in part from federal funds.

24.1.2 **CONTRACTOR** and its subcontractors shall comply with all terms, conditions, and requirements of the Americans with Disabilities Act of 1990 (P.L. 101-136), 42 U.S.C. 12101, as amended, and regulations adopted thereunder contained in 28 C.F.R. 26.101-36.999, inclusive, and any relevant program-specific regulations.

24.1.3 **CONTRACTOR** and its subcontractors shall comply with the requirements of the Civil Rights Act of 1964, as amended, the Rehabilitation Act of 1973, P.L. 93-112, as amended, and any relevant program-specific regulations, and Executive Order 11478 (July 21, 2014) and shall not discriminate against any employee or offeror for employment because of race, national origin, creed, color, sex, sexual orientation, gender identity, religion, age, disability or handicap condition (including AIDS and AIDS-related conditions).

24.1.4 If and when applicable to the particular federal funding and the Scope of Work under this Contract, **CONTRACTOR** and its subcontractors shall comply with: American Recovery and Reinvestment Act of 2009, Section 1605 – Buy American (100% Domestic Content of iron, steel and manufactured goods); Federal Highway Administration (FHWA) 23 U.S.C. § 313 – Buy America, 23 C.F.R. § 635.410 (100% Domestic Content of steel, iron and manufactured products); Federal Transit Administration (FTA) 49 U.S.C. § 5323(j), 49 C.F.R. Part 661 – Buy America Requirements (See 60% Domestic Content for buses and other Rolling Stock).

25. LOBBYING:

25.1 The parties agree, whether expressly prohibited by federal law, or otherwise, that no funding associated with this Contract will be used for any purpose associated with or related to lobbying or influencing or attempting to lobby or influence for any purpose the following:
25.1.1 Any federal, state, county or local agency, legislature, commission, council or board;
25.1.2 Any federal, state, county or local legislator, commission member, council member, board member, or other elected official; or
25.1.3 Any officer or employee of any federal, state, county or local agency; legislature, commission, council or board.

26. GENERAL WARRANTY:
CONTRACTOR warrants that it will perform all WORK required hereunder in accordance with the prevailing standard of care by exercising the skill and care normally required of individuals performing the same or similar WORK, under the same or similar circumstances, in the State of Nevada.

27. PROPER AUTHORITY:
The parties hereto represent and warrant that the person executing this Contract on behalf of each party has full power and authority to enter into this Contract. **CONTRACTOR** acknowledges that this Contract is effective only after approval by the Carson City Board of Supervisors and only for the period of time specified in this Contract. Any WORK performed by **CONTRACTOR** before this Contract is effective or after it ceases to be effective is performed at the sole risk of **CONTRACTOR**.

28. ALTERNATIVE DISPUTE RESOLUTION (Public Work):
If the WORK under this Contract involves a "public work" as defined under NRS 338.010(17), then pursuant to NRS 338.150, a public body charged with the drafting of specifications for a public work shall include in the specifications a clause requiring the use of a method of alternative dispute resolution ("ADR") before initiation of a judicial action if a dispute arising between the public body and the **CONTRACTOR** engaged on the public work cannot otherwise be settled. Therefore, unless ADR is otherwise provided for by the parties in any other incorporated attachment to this Contract, in the event that a dispute arising between **CITY** and **CONTRACTOR** regarding that public work cannot otherwise be settled, **CITY** and **CONTRACTOR** agree that, before judicial action may be initiated, **CITY** and **CONTRACTOR** will submit the dispute to non-binding mediation. **CITY** shall present **CONTRACTOR** with a list of three potential mediators. **CONTRACTOR** shall select one person to serve as the mediator from the list of potential mediators presented by **CITY**. The person selected as mediator shall determine the rules governing the mediation.

29. GOVERNING LAW / JURISDICTION:
This Contract and the rights and obligations of the parties hereto shall be governed by, and construed according to, the laws of the State of Nevada, without giving effect to any principle of conflict-of-law that would require the application of the law of any other jurisdiction. **CONTRACTOR** consents and agrees to the jurisdiction of the courts of the State of Nevada located in Carson City, Nevada for enforcement of this Contract.

30. ENTIRE CONTRACT AND MODIFICATION:
This Contract and its integrated attachment(s) constitute the entire Contract of the parties and such are intended as a complete and exclusive statement of the promises, representations, negotiations, discussions, and other Contracts that may have been made in connection with the subject matter hereof. Unless an integrated attachment to this Contract specifically displays a mutual intent to amend a particular part of this Contract, general conflicts in language between any such attachment and this Contract shall be construed consistent with the terms of this Contract. Unless otherwise expressly authorized by the terms of this Contract, no modification or amendment to this Contract shall be binding upon the parties unless the same is in writing and signed by the respective parties hereto and approved by the Carson City Board of Supervisors. The parties agree that each has had their respective counsel review this Contract which shall be construed as if it was jointly drafted.

31. ACKNOWLEDGMENT AND EXECUTION:
This Contract may be executed in counterparts. The parties hereto have caused this Contract to be signed and intend to be legally bound thereby as follows:

SAMPLE CONTRACT

AND ALL SUPPLEMENTAL AGREEMENTS AMENDING OR EXTENDING THE WORK CONTEMPLATED.

ACKNOWLEDGMENT AND EXECUTION:

In witness whereof, the parties hereto have caused this Contract to be signed and intend to be legally bound thereby.

CITY
Finance Director
Attn Laura Tadman
201 North Carson Street, Suite 3
Carson City, Nevada 89701
Telephone: 775-283-7137
Fax: 775-887-2107
LTadman@carson.org

CITY'S LEGAL COUNSEL
Jason Woodbury, District Attorney
I have reviewed this Contract and approve as to its legal form.

By:_____
Laura Tadman

Dated _____

By:_____
Deputy District Attorney

Dated _____

CITY'S ORIGINATING DEPARTMENT
BY: _____
_____
_____

By: _____

Dated _____

Account #_____

Project #_____

Amount $_____

SAMPLE CONTRACT

_____ deposes and says under penalty of perjury: That he/she is CONTRACTOR or authorized agent of CONTRACTOR; that he/she has read the foregoing Contract; and that he/she understands the terms, conditions and requirements thereof.

CONTRACTOR
BY: _____
TITLE: _____
FIRM: _____
CARSON CITY BUSINESS LICENSE #: __-_____
NEVADA CONTRACTOR'S LICENSE #: _____
Address: _____
City: _____ State: ____ Zip Code: _____
Telephone: _____/FAX No. _____
E-mail Address: _____

_____
(Signature of Contractor)

DATED _____

STATE OF_____)
)ss
County of _____)

Signed and sworn (or affirmed before me on this _____day of _____, 20__.

_____
(Signature of Notary)

(Notary Stamp)

SAMPLE CONTRACT

CONTRACT ACCEPTANCE AND EXECUTION:

The Board of Supervisors for Carson City, Nevada at their publicly noticed meeting of _____ approved the acceptance of the attached Contract hereinbefore identified as **CONTRACT No. 1415-143** and titled **Carson City Animal Services Facility**. Further, the Board of Supervisors authorizes the Mayor of Carson City, Nevada to set his hand to this document and record his signature for the execution of this Contract in accordance with the action taken.

CARSON CITY, NEVADA

_____
ROBERT L. CROWELL, MAYOR

DATED this ___ day of _____, 20___.

ATTEST:

_____
SUSAN MERRIWETHER, CLERK-RECORDER

DATED this ___ day of _____, 20___.

PERFORMANCE BOND

Doc. No. 2151
(Rev. 11-17-99)

KNOW ALL MEN BY THESE PRESENTS, that I/we_____
_____as Principal, hereinafter called Contractor, and
_____
a corporation duly organized under the laws of the State of Nevada, as Surety, hereinafter called the Surety, are held and firmly bound unto Carson City, Nevada a consolidated municipality of the State of Nevada, hereinafter called City, for the sum of $_____Dollars(state sum in Words)_____
_____
for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, 2015, entered into a contract with the City for **BID # 1415-143** and titled **"Carson City Animal Services Facility"** in accordance with drawings and specifications prepared by Carson City and which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract then this obligation shall be null and void; otherwise it shall remain in full force and effect. The Surety hereby waives notice of any alteration or extension of time made by the City and its obligation is not affected by any such alteration or extension provided the same is within the scope of the contract. Whenever Contractor shall be, and is declared by City to be in default under the Contract, the City having performed City's obligations thereunder, the Surety may promptly remedy the default or shall promptly:

1)Complete the Contract in accordance with its terms and conditions; or

2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by the City and the Surety jointly of the lowest responsive, responsible bidder, arrange for a contract between such bidder and the City, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price, but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the contract price", as used in this paragraph, shall mean the total amount payable by City to Contractor under the Contract and any amendments thereto, less the amount properly paid by City to Contractor. No right of action shall accrue on this bond to or for the use of any person or corporation other than the City or successors of the City.

PERFORMANCE BOND

Continued for **BID # 1415-143** and titled **"Carson City Animal Services Facility**"

BY:	**(Signature of Principal)**
TITLE:	
FIRM:	
Address:	**L.S.**
City, State, Zip	
Phone:	
Printed Name of Principal	
Attest By	**(Signature of Notary)**
Subscribed and Sworn before me this day of	**,2015**

CLAIMS UNDER THIS BOND MAY BE ADDRESSED TO:	**Nevada Resident Agent Information (complete for out of state bonding companies)**
Name of Surety	**Name of Local Agent**
Address	**Address**
City	**City**
State/Zip Code	**State/Zip Code**
Name	**Agent's Name**
Title	**Agent's Title**
Telephone	**Agent's Telephone**
Surety's Acknowledgment:	**Nevada Resident Agent's Acknowledgment:**
By:	**By:**

NOTICE:

No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in the State of Nevada. Certified copy of Power of Attorney must be attached.

LABOR AND MATERIAL PAYMENT BOND

Doc. No. 2152
(Rev. 11-17-99)

KNOW ALL MEN BY THESE PRESENTS, that I/we _____
_____as Principal, hereinafter called Contractor, and
_____ a
corporation duly organized under the laws of the State of Nevada, as Surety, hereinafter called the Surety, are held and firmly bound unto Carson City, Nevada a consolidated municipality of the State of Nevada, hereinafter called City, for the $_____Dollars (state sum in words)_____
_____f
or the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, 2015 entered into a contract with the City for **BID # 1415-143** and titled "**Carson City Animal Services Facility**" in accordance with drawings and specifications prepared by Carson City and which contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

1) A claimant is defined as one having a direct contract with the Contractor or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental of equipment directly applicable to the Contract.

2) The above-named Principal and Surety hereby jointly and severally agree with the City that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The City shall not be liable for the payment of any costs or expenses of any such suit.

3) No suit or action shall be commenced hereunder by any claimant:

   a) Unless claimant, other than one having a direct contract with the Contractor, shall have given written notice to any two of the following: the Contractor, the City, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such notice shall be personally served or served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal at any place the Principal maintains an office or conducts its business.

   b) After the expiration of one (1) year following the date on which the last of the labor was performed or material was supplied by the party bringing suit.

   c) Other than in a court of competent jurisdiction for the county or district in which the construction contract was to be performed.

LABOR AND MATERIAL PAYMENT BOND

Continued for **BID #1415-143** and titled "**Carson City Animal Services Facility**"

4) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against said improvement, whether or not claim for the amount of such lien be presented under and against this bond.

BY:	**(signature of Principal)**
TITLE:	
FIRM:	
Address:	**L.S.**
City, State, Zip	
Phone:	
Printed Name of Principal:	
Attest by:	**(signature of notary)**
Subscribed and Sworn before me this day of	**, 2015**

CLAIMS UNDER THIS BOND MAY BE ADDRESSED TO:	**Nevada Resident Agent Information (complete for out of state bonding companies)**
Name of Surety	**Name of Local Agent**
Address	**Address**
City	**City**
State/Zip Code	**State/Zip Code**
Name	**Agent's Name**
Title	**Agent's Title**
Telephone	**Agent's Telephone**
Surety's Acknowledgment:	**Nevada Resident Agent's Acknowledgment:**
By:	**By:**

NOTICE:

No substitution or revision to this bond form will be accepted. Sureties must be authorized to do business in and have an agent for service of process in the State of Nevada. Certified copy of Power of Attorney must be attached.

GENERAL CONDITIONS

SECTION 1.0 INTENT, DEFINITIONS, ABBREVIATIONS

GC 1.1 INTENT OF CONTRACT DOCUMENTS

The intent of the Contract Drawings and Specifications is to describe the details for the construction and completion of the Work which the Contractor undertakes to perform in accordance with the terms of the Contract. Contract Drawings and Specifications are divided into groups for the convenience of the City Engineer, and Construction Manager. These divisions are not for apportioning Work or responsibility for Work among subcontractors, suppliers, and manufacturers. The Contractor shall provide the City with a complete and operable Work or improvement, even though the Contract Drawing and Specifications may not specifically call out all items or items of work required of the Contractor to complete his/her tasks, incidental appurtenances, materials and the like and without additional compensation.

Where the Contract Drawings or Specifications describe portions of the Work in general terms but not in complete detail, it is understood that only the best general practice is to prevail and that only materials and workmanship of the best quality are to be used. The Contractor shall furnish tools, equipment, and incidentals, and do all the Work involved in executing the Contract in a satisfactory and complete manner.

The Instructions to Bidders, General Conditions, Special Conditions, Technical Specifications, Standard Specifications, Drawings and all supplementary documents are intended to be complete and complementary and to prescribe a complete work. If any omissions are made of information necessary to carry out the full intent and meaning of the Contract Documents, the Contractor shall immediately call the matter to the attention of the Engineer for furnishing of detail instructions. If specific lines, grades, and dimensions are not shown on the Drawings, those furnished by the Engineer shall govern.

Anything mentioned in these Specifications and not indicated on the Contract Drawing, or anything indicated on the Contract Drawing and not mentioned in these Specifications, shall be in the same force and effect as if indicated or mentioned in both.

In the event the materials and/or equipment are to be furnished by the City, as designated in the Special Conditions, this shall not relieve the Contractor of the above requirements to furnish all other labor, materials, and equipment to complete the Contract.

GC 1.2 PARTIAL INVALIDITY

If any provision of this Contract is held by a court of competent jurisdiction to be invalid, void or unenforceable, the remaining provisions shall nevertheless continue in full force without being impaired or invalidated in any way.

GC 1.3 GOVERNING ORDER OF BIDDING AND CONTRACT DOCUMENTS

The Bidding and Contract Documents include various divisions, sections, and conditions which are essential parts for the Work to be provided by the successful Bidder. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete Work. In case of discrepancy, the following precedence will govern:

a. Permits from City Departments and other Agencies as may be required by law
b. Change Orders
c. Contract
d. Addenda
e. Special Conditions
f. Technical Specifications
g. General Conditions
h. Contract Drawing s
i. Standard Specifications for Public Works Construction (Orange Book specifications) sponsored and distributed by R.T.C. of Washoe County, Washoe County, City of Sparks, City of Reno, Carson City, and City of Yerington; 1996 Edition with Revision No. 1 dated 12-15-1998, Revision No. 2 dated 5-1-2000, Revision No. 3 dated 11-08-2001, Revision No. 4 dated 2-27-2004,and Revision No. 5 dated 2-14-2007.
j. Reference Specifications

GENERAL CONDITIONS

With reference to Contract Drawing, the order of precedence is as follows:

1) Addenda/Change Order Drawings govern over any other Drawing
2) Figures govern over scaled dimensions
3) Contract Detail Drawings govern over Contract General Drawings
4) Contract Drawing govern over Standard Details

GC 1.4 HEADINGS

Headings to parts, divisions, sections, articles, paragraphs, subparagraphs, and forms are inserted for convenience of reference only and shall not affect the interpretation of the Contract Documents.

GC 1.5 DEFINITIONS

The words directed, required, permitted, ordered, instructed, designated, applicable, appropriate, sufficient, proper, desirable, necessary, prescribed, approved, acceptable, satisfactory or words of like import refer to actions, expressions, and prerogatives of the City, Design Consultant, or Construction Manager.

Each gender work includes the masculine, feminine and neuter genders. References to gender, such as "workman" and "flagman" and the pronouns "he" or "his" referring to such titles, are abstract in the specifications, are used for the sake of brevity, and are intended to refer to persons of either sex and, if applicable, to the neuter gender.

Singular words include the plural and "person" includes firms, companies, and corporations.

Where used in the Contract Documents, the following words and terms shall have the meanings indicated. The meanings shall be applicable to the singular, plural, masculine, and feminine of the words and terms.

Acceptance - The formal action by the Carson City Board of Supervisors or the Carson City Regional Transportation Commissions accepting the work as being complete. See Final Acceptance.

Act of God - An earthquake, flood, cyclone, or other cataclysmic phenomenon of nature. A rain, windstorm, high water, or other natural phenomenon which might reasonably have been anticipated from historical records of the general locality of the Work, shall not be construed as an Act of God.

Addenda - Written or graphic instruments issued prior to the Bid Opening which modify or interpret the Contract Documents, Drawings, and specifications by additions, deletions, clarifications, or corrections. All addenda become part of the Contract Documents.

Additive Alternative Bid - The amount stated in the Bid Schedule - Additive Schedule to be added to the amount of the Base Bid if the corresponding change in the Work, as described in the Bid Documents, is accepted by the City with the Award of the Project, subject to the availability of funds. Bidder must quote all items to be responsive and considered for Award.

Agreement - The written Contract covering the performance of the Work as more fully described in the Contract Documents.

As Shown, As Indicated, As Detailed - Where these words or words of similar import are used, it shall be understood that reference to the Drawings is made unless stated otherwise.

As Directed, As Permitted, As Approved - Where these words or words of similar import are used, it shall be understood that written direction, requirements, permission, approval or acceptance of the Construction Manager is intended unless otherwise stated.

Bid - The offer or proposal of the Bidder submitted on the prescribed forms setting forth the price for the Work to be performed.

GENERAL CONDITIONS

Bidder - Any properly licensed and qualified individual, firm, partnership, corporation, joint venture, or combination thereof, submitting a proposal for the Work contemplated, acting directly or through a duly authorized representative.

Bond(s) - Bid, Performance, or Payment Bonds and Guarantee and other instruments of surety, furnished by the Contractor and Contractor's surety in accordance with the Contract Documents.

Calendar Day - Every day shown on the calendar.

Cardinal Change - A change required by the City which requires the Contractor to build a fundamentally different Project than originally planned.

City - Consolidated City/County of Carson City, Nevada. Under this Contract, the City is usually identified by name.

Change Order - A written order to the Contractor authorizing an addition, deletion, or revision of the work within the general scope of the Contract, or an adjustment in the contract price or time. Also referred to as a Contract Change Order.

Construction Completion or Completion of Work - Construction completion is when all work is complete, including punch list items, final cleanup, demobilization and submittal of final documentation, in accordance with the contract documents.

Construction Conflicts - Conflicts which may occur whenever corrections, alterations, or modifications of the Work under this Contract are ordered and approved by the City and change the character of the Work, the amount of the Work or the period of time in which to complete said Work.

Construction Inspector - The person designated by the City to act as its representative at the construction site, or remote locations, to perform construction inspection services.

Construction Manager - The person designated in writing by the City to act as its representative at the construction site and to perform construction inspection services and administrative functions relating to this Contract. Initial contact by the Contractor with the City shall be through the Construction Manager.

Construction Schedule - A graphic document that is computer generated which utilizes "critical path method" or "bar chart method" for scheduling projects. The construction schedule is supported by reports that can be generated to demonstrate relationships and logic.

Contract - The written agreement between Carson City and the Contractor setting forth the obligations of the parties thereunder, including, but not limited to the performance of the work, the furnishing of labor and materials, and the basis of payment.

Contract Completion Date - The date set forth in the Contract documents for the completion of all Contract work, including all punch list work, final cleanup and demobilization.

Contract Documents - The words "Contract Documents" shall mean any or all of, but not limited to, the following items, as applicable: Notice to Contractors, Instructions to Bidders, Bid Bond, Bid Proposal Summary, Contract Award Instructions, Contract, Performance Bond, Labor and Material Payment Bond, General Conditions, Prevailing Wage Rates, Permits, Special Conditions, Standard Specifications, Technical Specifications, Drawings, Addenda, if any, Executed Change Orders, if any, Notice of Award, and Notice to Proceed

Each of these items is to be considered by reference as part of the Contract Documents. Also referred to as the Contract.

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Contract Price - The total amount payable to the Contractor under the terms and conditions of the Contract based on the price given on the Bid Proposal, with adjustments made in accordance with the Contract. Said total amount shall include all sales, use, and other consumer taxes related to the work. The base amount given in the Bid Proposal shall be either a lump sum Bid or the summation of the unit price Bids multiplied by the estimated quantities set forth in the Bid form. Also referred to as the Contract Amount.

Contract Time - Number of calendar days stated in the Contract Documents for the completion of the Work, including all authorized time adjustments.

Contractor - The person or persons, firms, partnership, corporation, joint venture, or combination thereof, who have entered into the Contract with the City. "Contractor" shall mean the principal Contractor as defined by NRS 624.020 or his/her authorized representative.

Contractor's Plant and Equipment - Equipment, material, supplies, tools and all other items, except labor, brought onto the site by the Contractor to carry out the Work, but not to be incorporated in the Work.

Day(s) - See Calendar Day(s). A twenty-four hour time period beginning at 12 midnight of day one and terminating at 12 midnight of the same day.

Design Consultant - The engineer, architect or other licensed professional designated by the City to have design control over the Work or a specified portion of the Work, acting either directly or through duly authorized representatives. Such representatives shall act within the scope of the particular duties delegated to them.

Drawings - Refers to the Contract Drawing, profiles, cross sections, elevations, details, and other working Drawings and supplementary Drawings, or reproductions thereof, signed by the Design Consultant and bearing the appropriate Professional seal, approved by the City, and are referred to in the Contract Documents. Drawings show the location, character, dimensions, and details of the Work to be performed. The term "plans" has the same meaning as the term Drawings.

Engineer- The City Engineer of Carson City, or other person or firm designated by the City Engineer as his/her duly authorized representative.

Extra Work - An item of work not provided for in the Contract as awarded but found essential by the Engineer to the satisfactory completion of the Contract within its intended scope.

Field Directive - Written documentation of the actions of the City or Construction Manager in directing the Contractor. Also referred to as a Work Directive.

Field Order - A written instruction given to the Contractor by the City or Construction Manager, authorizing Work that is a change to the scope of Work, to be carried out on a time and materials basis, or a negotiated lump sum. Also referred to as a Work Directive.

Final Acceptance - The formal acceptance by the City of the Work for an entire Contract, which has been completed in all respects (including submittal of the operation and maintenance manuals, equipment start-up and testing, warranty of title, and submittal of record drawings, lien and claims releases, and warranty), in accordance with the Contract Documents and any modifications thereof previously approved.

Final Completion - Final completion is when construction is complete, the City has accepted the work, and the Notice of Completion has been recorded in the Office of the County Recorder. This is based on acceptance by the Carson City Board of Supervisors or the Carson City Regional Transportation Commission of the completed work embraced by the Contract.

GENERAL CONDITIONS

Float - Float or "total float" shall be defined as provided in the Associated General Contractors of America "CPM in Construction, A Manual for General Contractors".

General Conditions - Part of the Contract Documents representing the general clauses that establishes how the Contract is to be administered.

Holidays - Legal holidays observed by the City.

Inspector- The authorized representative of the Engineer assigned to observe the work or materials therefor.

Intermediate Completion- Intermediate Completion is the stage in the progress of the work when an element, section, or division of the Work is sufficiently complete in accordance with the contract documents so that the City can occupy or utilize the essential component(s) of the contractually defined element, section or division of the Work for its intended purpose.

Laboratory - The designated materials testing laboratory authorized by the City to test materials and Work involved in the Contract.

Liquidated Damages - Money to be paid to the City or to be deducted from any payments due to the Contractor for each day's delay in completing the whole, any specified portion of the Work beyond the time allowed in the Contract Documents, submitting award documentation, or technical submittals.

Major Bid Item - Any bid item whose unit bid item price extension is 5 percent or more of the total Contract Price.

Notice of Award - A written notice by the City to the Contractor informing it that the Contract has been awarded to the Contractor.

Notice of Completion - The City will cause to be recorded in the Office of the County Recorder, a notice of completion, which is based on acceptance by the Carson City Board of Supervisors or the Carson City Regional Transportation Commission of the completed work embraced in the Contract.

Notice to Proceed - A) The written notice by the City to the Contractor authorizing the Contractor to proceed with the Work and establishing the date of commencement of the Work. B) Material Only Notice to Proceed - Written notice by the City to the Contractor authorizing the Contractor to proceed with ordering materials, preparing shop Drawings, and acquiring permits only.

Owner B Carson City, which has contracted for the performance of the Work.

Owner's Representative - The person designated in writing by the City to act as its agent on specified matters relating to this Contract. The Owner's Representative may or may not be the Engineer, the Construction Manager, or the Design Consultant.

Plans - All drawings or reproductions thereof pertaining to details of the Work and which are made a part of the Contract Documents. The term "Plans" has the same meaning as "Drawings". See Drawings

Project - The undertaking to be performed under the provisions of the Contract.

Provide - Shall be understood to mean furnish and install, complete in place.

Punch List - List of incomplete items of work and of items of work which are not in conformance with the Contract.

Reference Documents - Bulletins, Standards, Rules, Methods of Analysis or Test, Codes and Specifications of public or private agencies, Engineering Societies, or Industrial Associations. Reference

shall be to the latest edition thereof, including Amendments, which are in effect and published at the time the Invitation for Bids is issued, unless a specific edition is identified, in which case reference shall be to such specific edition.

Right-of-Way - The area provided by the City for use in constructing the work covered by the Contract, including appurtenances thereto. The right-of-way so designated may be either temporary or permanent.

Schedule of Values - A list of all major items, or those requested by the City, including their respective quantities and unit prices for all Work and materials furnished by the Contractor in order to comply with the contract drawings and specifications, whether or not indicated in the approximate quantities or pertaining to the items of work listed therein.

Service Connection - All or any portion of a pipeline including sewer laterals, conduit, wire, cable or duct, including meters between a utility main distribution line and an individual customer or customers when served by a single connection.

Service Provider - A service provider is an organization, company, or business that provides a service for the Work, but does not perform the Work at the Project site.

Shall - Refers to actions by either the Contractor or the City and means the Contractor or City has entered into a covenant with the other party to do or perform the action.

Shop Drawings - All diagrams, drawings, illustrations, brochures, schedules, and all other data or submittals required by the Contract to be furnished by the Contractor illustrating fabrication, installation, dimensions, and other aspects of the Work.

Site - The property as described in the Special Conditions or as shown on the Drawings where the Project is to be constructed. See Work Area.

Special Conditions - Part of the Contract Documents that establishes special requirements peculiar to the Work and supplementary to the General Conditions.

Specifications - That part of the Contract Documents consisting of the General Conditions, Special Conditions, applicable Standard Specifications, Technical Specifications, other named standard specifications.

Standard Plans - The Standard Details for Public Works Construction, (Orange Book Details) sponsored and distributed by RTC of Washoe County, Washoe County, City of Reno, City of Sparks, Carson City and City of Yerington.

Standard Specifications - The Standard Specifications for Public Works Construction, (Orange Book Specifications) sponsored and distributed by RTC of Washoe County, Washoe County, City of Reno, City of Sparks, Carson City and City of Yerington; 1996 Edition with Revision No. 1 dated 12-15-1998, Revision No. 2 dated 5-1-2000, Revision No. 3 dated 11-08-2001, Revision No. 4 dated 2-27-2004, and Revision No. 5 dated 2-14-2007.

Subcontractor - A subcontractor is a person or entity who has a direct Contract with the Contractor to perform Work at the Site. The term subcontractor means a subcontractor or subcontractor's authorized representative.

Submittals - The information which is specified for submission to the Construction Manager in accordance with the specifications.

Substantial Completion - Substantial Completion is the stage in the progress of the Work when all Work is sufficiently complete in accordance with the Contract Documents so the City can occupy or utilize the essential components of the Project for its intended use.

Sub-subcontractor - A sub-subcontractor is a person or entity who has a Contract with a subcontractor to perform any of the Work at the Site. The term sub-subcontractor means a sub-subcontractor or an authorized representative thereof.

Superintendent - the Contractor's authorized representative in responsible charge of the Work.

Supplier - Any person, firm, corporation, or organization who supplies materials or equipment for the Work, including that fabricated to a special design, and may also be a subcontractor or a sub-subcontractor, also referred to as Vendor.

Surety - The person, firm, corporation, or organization that joins with the Contractor in assuming the liability for the faithful performance of the Work and for the payment of all obligations pertaining to the Work in accordance with the Contract Documents by issuing the Bonds required by the Contract Documents or by law.

Technical Specifications- The specialized directions, provisions, and requirements of the Contract Documents for materials, equipment, construction systems, standards, and workmanship.

Title and Headings - The titles or headings of the section and subsections in the Contract Documents are intended for convenience of reference and shall not be considered as having bearing on their interpretation.

Total Base Bid - The base amount given in the Bid Schedule as either a lump sum bid, or the summation of the unit price bids multiplied by the estimated quantities as set forth in the bid form.

Utility- Public or private fixed improvement for the transportation of fluids, gases, power, signals, or communications and shall be understood to include tracks, overhead and underground wires, cables, pipelines, conduits, ducts, sewers or storm drains.

Work - The labor, materials, equipment, supplies, and other items necessary for the execution, completion, and fulfillment of the Contract.

Work Area - That area which is defined on the Contract Drawings as the City's Right-of-Way and/or temporary easement available to the Contractor for construction purposes. See Site.

Work Directive - A written directive to the Contractor issued after the effective date of the Contract and signed by the City's Construction Manager ordering an addition, deletion or revision in the Work, or responding to differing or unforeseen conditions under which the Work is to be performed, or to emergencies. A Work Directive may not change the Contract Price or Contract Time, but is the basis and evidence that the parties expect that the change directed or documented by the Work Directive will be incorporated in a subsequently issued Change Order following negotiations of the parties as to its effect, if any, on the Contract Price or Contract Time.

Working Day - A calendar day on which weather and other conditions not under the control of the Contractor will permit construction operations to proceed for at least 5 hours of the day with at least seventy-five (75) percent of the normal working force engaged in performing the current critical item(s) of work on the latest favorably reviewed Construction Schedule, exclusive, however, of Saturdays, Sundays, City recognized holidays, and any day that is incumbent upon the Contractor, by means of a Master Labor Agreement, to observe as a holiday. However, if the Contractor elects to work on such days, those days will be considered as a working day.

GC 1.6 ABBREVIATIONS

Whenever the following terms are used, the intent and meaning shall be as follows:

GENERAL CONDITIONS

Abbreviations Stand For

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AI	The Asphalt Institute
AIA	American Institute of Architects
AIEE	American Institute of Electrical Engineers
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association
ANSI	American National Standards Institute (formerly USASI, USAS, ASA)
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
AREA	American Railway Engineers Association
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASLA	American Association of Landscape Architects
ASME	American Society of Mechanical Engineers
ASTM	American Society of Testing and Materials
AWG	American Wire Gauge
AWPA	American Wood-Preserver's Association
AWS	American Welding Society
AWWA	American Water Works Association
CBR	California Bearing Ratio
COE	Department of the Army Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
DFPA	Douglas Fir Plywood Association
DIPRA	Ductile Iron Pipe Research Association
EIA	Electronic Industries Association
EPA	U.S. Environmental Protection Agency
ETL	Electronic Testing Laboratory
FHWA	Federal Highway Administration
HI	Hydraulic Institute
HMI	Hoist Manufacturers Institute
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IPCE	International Power Cable Engineers Association
ISA	Instrument Society of America
MUTCD	Manual on Uniform Traffic Control Devices
NAAMM	National Association of Architectural Metal Manufacturers
NBFU	National Board of Fire Underwriters
NBS	National Bureau of Standards
NDEP	Nevada Department of Environmental Protection
NDOT	Nevada Department of Transportation
NEC	National Electric Code
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
NOSHA	Nevada Occupational Safety and Health Act
NRS	Nevada Revised Statutes
NSF	National Sanitation Foundation
NWMA	National Woodwork Manufacturers Association
OSHA	Occupational Safety and Health Act

GENERAL CONDITIONS

PCA	Portland Cement Association
RTC	Regional Transportation Commission
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SSPC	Structural Steel Painting Council
TCA	Tile Council of America
UBC	Uniform Building Code
UPC	Uniform Plumbing Code
U/L or UL	Underwriters Laboratories
WCLIB	West Coast Lumber Inspection Bureau

GENERAL CONDITIONS

SECTION 2.0 CONTRACT ADMINISTRATION AND RESPONSIBILITIES: OWNER′S REPRESENTATIVE, CONSTRUCTION MANAGER, DESIGN CONSULTANT AND CONTRACTOR

GC 2.1 ADMINISTRATION

The Owner's Representative, the Construction Manager, and the Design Consultant will provide administration of the Contract as hereinafter discussed. The duties, responsibilities and limitations of authority of the Design Consultant and the Construction Manager as the representatives of the City during construction, as set forth in the Contract Documents, will not be modified or extended without approval of the City.

In case of the termination of the employment of the Design Consultant or the Construction Manager, the City shall appoint a Design Consultant or a Construction Manager whose status under the Contract Documents shall be that of the former Design Consultant or Construction Manager, respectively.

GC 2.2 OWNER'S REPRESENTATIVE

2.2.1 GENERAL

The Owner's Representative has the authority to act on behalf of the City on change orders, progress payments, Contract decisions, acceptability of the Contractor's work, and early possession.

2.2.2 CHANGE ORDERS

The Owner's Representative has the authority to accept or reject change orders and cost proposals submitted by the Contractor or as recommended by the Construction Manager.

2.2.3 PROGRESS PAYMENTS

The Owner's Representative has the authority to accept or reject requests for progress payments which have been submitted by the Contractor and recommended by the Construction Manager.

2.2.4 CONTRACT DECISIONS

Should the Contractor disagree with the Construction Manager's decision with respect to the Contract, the Contractor may appeal to the Owner's Representative in accordance with the provisions of the Contract.

2.2.5 ACCEPTABILITY OF WORK

The Owner's Representative has the authority to make the final determination of the acceptability of the Work. The Owner's Representative also has the authority to accept or reject the Design Consultant's recommendations regarding retention of non-conforming work as provided.

GC 2.3 CONSTRUCTION MANAGER

2.3.1 GENERAL

The Construction Manager is a representative of the City employed to act as advisor and consultant to the City in construction matters related to the Contract.

All instructions to the Contractor and all communications from the Contractor to the City or the Design Consultant shall be forwarded through the Construction Manager. The Construction Manager will have authority to act on behalf of the City only to the extent provided in the Contract Documents. The City has delegated its authority to the Construction Manager to make initial decisions regarding questions which may arise as to the quality or acceptability of materials furnished and work performed, and as to the manner of performance and rate of progress of the Work under the Contract. The Construction Manager shall interpret the intent and meaning of the Contract and shall make initial decisions with respect to the Contractor's fulfillment of the Contract and the Contractor's entitlement to compensation. The Contractor shall look initially to the Construction Manager in matters relating to the Contract.

2.3.2 REPRESENTATIVE

The Construction Manager will generally be represented at the site by a resident Construction Manager, a resident engineer, or a resident inspector who will observe the progress, quality, and quantity of the Work

to determine, in general, if the Work is proceeding in accordance with the intent of the Contract Documents. The

Construction Manager shall not be responsible for the Contractor's construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work.

In accordance with the provisions detailed elsewhere in these General Conditions, the Construction Manager will make decisions relative to all matters of interpretation or execution of the Contract Documents.

2.3.3 INSPECTION OF CONSTRUCTION

The Construction Manager shall have the authority to reject Work and materials which do not conform to the Contract Documents, and to require special inspection or testing.

The Construction Manager may employ one or more inspectors to observe the Work and to act in matters of construction under this Contract. An inspector is not authorized to revoke, alter, or waive any requirements of the Contract Documents. The inspector is authorized to call to the attention of the Contractor any failure of the Work, materials or workmanship to conform to the Contract Documents. The inspector shall have the authority to reject materials or, in any emergency, suspend the Work. The Contractor may appeal any such issue which it disagrees with to the Construction Manager for decision.

2.3.4 ACCEPTABILITY OF THE WORK

The Construction Manager shall make a recommendation to the City as to the acceptability of the Work.

2.3.5 CHANGE ORDERS

The Construction Manager has the authority to initiate change orders; to reject change orders proposed by the Contractor or Design Consultant; to negotiate and recommend acceptance of change orders; or to order minor changes in the Work at no cost or time extension to the City.

2.3.6 CONSTRUCTION SCHEDULE

The Construction Manager has the authority to review and recommend acceptance of the Progress Schedule submitted by the Contractor at the start of the Work and subsequent revisions for conformance to the specified sequence of work and logic.

2.3.7 PROGRESS PAYMENTS

The Construction Manager has the authority to recommend acceptance or rejection of requests for progress payments which have been submitted by the Contractor.

2.3.8 FINAL ACCEPTANCE

The Construction Manager, with the assistance of the Design Consultant, will conduct inspections to determine substantial completion and final construction completion of the Work, and will receive and forward to the City, for the City's acceptance, written warranties, and related documents required by the Contract and assembled by the Contractor. The Construction Manager will recommend acceptance of the work by the City.

GC 2.4 DESIGN CONSULTANT

2.4.1 GENERAL

The Design Consultant will have the authority to act on behalf of the City to the extent provided in the Contract Documents.

2.4.2 INTERPRETATIONS

The Design Consultant has the authority to be the initial interpreter of the technical requirements of the Contract Documents. Either party to the Contract may make written request to the Construction Manager

for interpretations necessary for the proper execution or progress of the Work. The Construction Manager shall refer such written requests of the Contractor to the Design Consultant, who will render such interpretations. Where the Contractor has requested an interpretation from the Construction Manager, or been notified by the Construction Manager that such interpretation has been requested by the City, any Work done before receipt of such interpretations, if not in accordance with same, is subject to being removed and replaced or adjusted as directed by the Construction Manager without additional expense to the City.

2.4.3 ACCEPTABILITY OF THE WORK

The Design Consultant has the authority to make a recommendation as to the acceptability of the Work. The Design Consultant has the authority to recommend acceptance regarding the retention of defective work.

2.4.4 SITE OBSERVATIONS

The Design Consultant may visit the site at intervals appropriate to the stage of construction to become familiar with the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. However, the Design Consultant will not be required to make extensive or continuous on-site inspections to check the quality or quantity of the Work.

2.4.5 SUBMITTALS

The Design Consultant has the authority to review and take other appropriate action upon the Contractor's submittals of shop drawings, product data, and samples for conformance with the design concept of the Work and the Contract Documents.

GC 2.5 CITY

2.5.1 GENERAL

The City, acting through the Owner's Representative or the Construction Manager, shall have the authority to act as the sole judge of the Work and materials with respect to both quantity and quality as set forth in the Contract.

2.5.2 ATTENTION TO WORK

The City shall notify the Contractor of the name of the individual designated as the Owner's Representative and the name of the individual designated by the Construction Manager to act as the Construction Manager's representative with the City's authority. The Construction Manager's designated representative will regularly be at the site of the Work.

2.5.3 INSPECTION

In addition to the Construction Manager, the City may employ one or more inspectors to observe the Work and to act in matters of construction under this Contract. An inspector is not authorized to revoke, alter, or waive any requirements of the specifications. The inspector is authorized to call to the attention of the Contractor any failure of the Work or materials to conform to the Contract Documents. The inspector shall have the authority to reject materials or, in any emergency, suspend the Work. The Contractor may appeal any such issue which it disagrees with to the Construction Manager for its decision.

Separate and independent from the inspection above, the Project may be inspected by Building Officials or other agency officials (i.e. Fire Officials, Nevada Department of Transportation) for code compliance. Such inspectors shall have the authority provided to them by local jurisdiction.

If upon routine inspection by the City a problem is found that creates a safety hazard for either City employees or the general public and the General Contractor or subcontractor is not on site, the City employees will correct the safety hazard and the General Contractor will be charged for the City's labor, materials and equipment for making the correction plus a fixed penalty fee of $500 per occurrence.

2.5.4 CITY'S RIGHT TO CARRY OUT THE WORK

If the Contractor and/or his/her surety defaults or neglects to carry out the Work in accordance with the Contract Documents, and fails within seven (7) days after receipt of written notice from the City to commence correction of such default or neglect with diligence and promptness, the City may make good such deficiencies.

Whenever, in the opinion of the Construction Manager, the Contractor has not taken sufficient precautions for the safety of the public or the protection of the Work to be constructed under this contract, or of adjacent structures or property which may be injured by processes of construction on account of such negligence, and whenever in the opinion of the Construction Manager, an emergency shall arise and immediate action shall be considered necessary in order to protect public or private, personal or property interest, then and in that event the Construction Manager, with or without notice or prior legal process to the Contractor, may provide suitable protection to the said interests by causing such work to be done and such material to be furnished as shall provide such protection as the Construction Manager may consider necessary and adequate.

In either case an appropriate Change Order shall be issued unilaterally deducting from the payments due the Contractor the cost of correcting such deficiencies and/or for performing such work, including compensation for the Design Consultant's, the Construction Manager's, and City's additional services made necessary by such default, neglect, failure or emergency.

The performance of such emergency work under the direction of the Construction Manager shall in no way relieve the Contractor from any damages which may occur during or after such precaution has been taken by the Construction Manager.

2.5.5 CITY'S RIGHT TO USE OR OCCUPY

The City reserves the right to use the sewer, water, reclaimed water, storm drains and roadway systems as well as the right to occupy and use any completed part or parts of the Work, providing these parts and facilities have been approved for use or occupancy by the City. The City anticipates to use the sewer, water, reclaimed water, storm drains and roadway systems throughout the construction contract, with no increase in the contract amount. Use of the systems will not change the contractual obligations of the Contractor regarding security, damage to the Work, insurance, the period for corrections to the Work, and the commencement of Warranties. The exercise of this right shall in no way constitute an acceptance of the total Work of this Contract, or any other part of the Work, nor shall it in any way prejudice the City's rights in the Contract, or any bonds guaranteeing the same. The Contract shall be deemed completed only when all the Work Contracted has been duly and properly performed and accepted by the City.

Prior to such occupancy or use, the City and Contractor shall agree in writing regarding the responsibilities assigned to each of them for payments, security, maintenance, heat, utilities, damage to the Work, insurance, the period for correction of the Work, and the commencement of warranties required by the Contract Documents.

In exercising the right to occupy or use completed parts of the Work, the City shall not make any use which will materially increase the cost to the Contractor without increasing the Contract Amount, nor materially delay the completion of the Contract without extending the time for completion.

The part or parts of the Work, if any, which the City anticipates to use or occupy during construction are generally noted in the Special Conditions. Failure to note a part or parts of the Work for use or occupancy shall not limit the City's right to use or occupy part or parts of the Work not noted.

2.5.6 CITY'S RIGHT TO PERFORM WORK AND TO AWARD SEPARATE CONTRACTS

The City reserves the right to perform the Work related to the Project with the City's own forces, and to award separate Contracts in connection with the Project or other Work on the site under these or similar Conditions of the Contract. If the Contractor claims that delay, damage, or additional cost is involved because of such action by the City, the Contractor shall make such claim as provided elsewhere in the Contract Documents.

When separate contracts are awarded for different portions of the Project or other Work on the Site, the term "Contractor" in the Contract Documents in each case shall mean the contractor who executes each separate agreement. The City will provide for the coordination of the Work of the City's own forces and of each separate contractor with the Work of the Contractor, who shall cooperate therewith.

2.5.7 PROPERTY RIGHTS IN MATERIALS

Nothing in this Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the soil, or after payment has been made for materials delivered to the Site of the Work, or stored subject to or under the control of the City. All such materials shall become the property of the City upon being so attached or affixed or upon payment for materials delivered to the Site of the Work or stored subject to or under the control of the City.

Soil, stone, gravel, and other materials found at the Site of the Work and which conform to the plans and specifications for incorporation into the Work may be used in the Work. No other use shall be made of such materials except as may be otherwise described in the plans and specifications.

2.5.8 CITY OBSERVED HOLIDAYS

The following are the legal Holidays observed by the City. The Contractor shall not perform any Work on a City observed Holiday. When the holiday falls on a Saturday, it is observed the prior Friday; when the holiday falls on a Sunday it is observed on the following Monday:

New Years Day - January 1st
Martin Luther King Day - 3rd Monday of January
Presidents Day - 3rd Monday of February
Memorial Day - last Monday of May
Independence Day - July 4th
Labor Day - 1st Monday of September
Nevada day - last Friday of October
Veterans Day - November 11th
Thanksgiving Day - 4th Thursday of November
Family Day - 4th Friday of November
Christmas Day - December 25th

Any other legal holiday declared by the President of the United States, the Governor of Nevada, or the Carson City Board of Supervisors.

2.5.9 AUDIT OF RECORDS

The City, acting through its Internal Auditor or an outside appointed auditor, may audit or direct the audit of any and all records of the Contractor pertaining to this Contract. In case any portion of this Contract is funded through NDOT, FHWA, or other agencies, they, too, shall have the right to audit any and all records of the Contractor pertaining to this Contract. Contractor agrees by entering this Contract to provide access to any and all records of Contractor pertaining to this Contract for a period of three (3) years after Contract acceptance.

2.5.10 ATTORNEY'S FEES

In the event the Contractor files a complaint or writ naming the City as a party and the Contractor fails to obtain all the relief requested in the complaint or writ, the Contractor shall pay the City reasonable attorney fees and the costs for participating in the litigation. It is specifically agreed that reasonable attorney fees shall be $150.00 per hour for City-employed attorneys or the usual per hour fee charged by any other attorney retained by the City to participate in the litigation.

GC 2.6 CONTRACTOR

2.6.1 OFFICE

The Contractor's office at the Project Site is hereby designated as the legal address of the Contractor for the receipt of documents, samples, notices, letters, and other articles of communication. Should the Contractor not maintain an office at the Project site, the Contractor shall notify the Construction Manager regarding the Contractor's legal address for its receipt of Project documents.

2.6.2 CONTRACTOR'S REPRESENTATIVE

At the pre-construction conference (see GC 3.9) the Contractor shall notify the City in writing of the name of the person and an alternate, if applicable, who will act as the Contractor's Representative(s) and shall have the authority to act in matters relating to this Contract. Such notification shall include the Representative's list of projects for which he/she held the position of Contractor's Representative for a three (3) year period. The list shall include the type of construction, the cost of construction, and the name of the owner(s) or agency(ies) including telephone numbers of contact persons. The Contractor's Representative shall have at least three (3) years of experience related to similar Work as described in the Contract Documents.

The Engineer and/or the City may reject the request for Contractor's Representative if, in the opinion of the Engineer and/or the City, the Contractor's Representative is not qualified to perform the Work. No additional payment or compensation will be considered for the rejection and subsequent hiring of Contractor's Representative. A replacement Contractor's Representative for a previously approved Contractor's Representative shall meet the same qualifications as listed above. Contractor shall submit the information requested above to demonstrate that the replacement Contractor's Representative meets the qualifications listed above.

The Contractor, acting through its Representative, shall give personal attention to, and shall manage the Work, so that it shall be prosecuted faithfully. The Contractor's Representative shall be an employee of the Contractor. Upon written request of the Contractor, this requirement may be waived by the City.

At all times during the progress of the Work, the Contractor's representative shall be personally present at the Project site, or a designated alternate shall be at the Project site who has the authority to act in matters relating to the Contract. The Contractor's representative or designated alternate shall have the authority to carry out the provisions of the Contract and to supply materials, equipment, tools, and labor without delay for the performance of the Work. If neither the Contractor's representative nor a designated alternate is at the Project site, the City acting through the Construction Manager shall have the authority to suspend the work until such a representative is at the Project site.

Before initial work is begun on the Contract, the Contractor shall file with the Construction Manager, and City, addresses and telephone numbers where the Contractor's and all subcontractors' representatives can be reached for emergency call outs during all hours, including nights and weekends, when work is not in progress.

2.6.3 CONSTRUCTION PROCEDURES

The Contractor will supervise and direct the Work. The Contractor shall determine the means, methods, techniques, sequences, and procedures of construction, except in those instances where the City, to define the quality of an item of work, specifies in the Contract a means, method, technique, sequence, or procedure for construction of that item of Work.

2.6.4 CONTRACTOR'S EMPLOYEES

The Contractor shall be responsible for the safety, adequacy, efficiency, and sufficiency of its employees.

If any person employed by the Contractor or its subcontractors, appear to the Construction Manager to be disorderly, disrespectful, rude, or intoxicated, such person shall be discharged from the site immediately by the Contractor.

2.6.5 SUBCONTRACTORS

Subcontractors will not have a direct relationship with the City. The persons engaged in the Work, including employees of subcontractors, suppliers and service providers, will be considered employees of the Contractor. The Contractor will be responsible for their work and their work shall be subject to the provisions of the Contract. The Contractor is as fully responsible to the City for the acts and omissions of its subcontractors and of persons either directly or indirectly employed by them as the Contractor is for the acts and omissions of persons directly employed by the Contractor. Nothing contained in the Contract Documents shall create any Contractual relationship between any subcontractor and the City. References in the Contract Document to actions required of subcontractors, manufacturers, suppliers, or any party other than the Contractor, the City, the Construction Manager, or the Design Consultant shall be interpreted as requiring that the Contractor shall require such subcontractor, manufacturer, supplier, or party to perform the specified action, unless the Contract Documents specifically state that the Work is not included in the Contract.

The Contractor shall employ only subcontractors who are properly licensed in accordance with Nevada State Law. Changes to subcontractors listed in the Bid shall be made only with the approval of the City.

2.6.6 CONTRACTOR'S EQUIPMENT AND FACILITIES

The Contractor shall furnish and maintain in good condition all equipment and facilities as required for the proper execution and inspection of the Work. Such equipment and facilities shall meet all requirements of applicable ordinances and laws.

2.6.7 CITY-CONTRACTOR COORDINATION

A. Service of Notice

Notice, order, direction, request, or other communication given by the Construction Manager or City to the Contractor shall be deemed to be well and sufficiently given to the Contractor if delivered to the Contractor's Representative, or to the Contractor's address provided in the Bid Proposal.

B. Suggestions to Contractor

Plans or methods of work suggested by the City, the Construction Manager, or the Design Consultant to the Contractor, but not specified or required, if adopted or followed by the Contractor in whole or in part, shall be used at the risk and responsibility of the Contractor. The City, Construction Manager, or the Design Consultant assume no responsibility therefore, and in no way will be held liable for any defects in the Work which may result from or be caused by use of such suggested plan or method of work.

C. Cooperation

The Contractor shall conduct its operations so as to interfere as little as possible with those of other contractors or subcontractors on or near the Work. It is expressly understood that the City has the right and may award other contracts in connection with the Work so long as it does not unreasonably interfere with the Work under this Contract.

The Contractor shall afford the City, the Construction Manager and separate contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work, and shall connect and coordinate the Work with the others as required by the Contract Documents.

If any part of the Contractor's Work depends for proper execution or results upon the Work of the City or any separate contractor, the Contractor shall, prior to proceeding with the Work, promptly report to the Construction Manager any apparent discrepancies or defects in such other work that render it unsuitable for such proper execution and results. Failure of the Contractor to so report shall constitute an acceptance of the City's or separate contractor's work as fit and proper to

receive the Work, except as to latent defects which subsequently become apparent in such work by others.

If requested by the Contractor, the City shall arrange meetings with other contractors performing work on behalf of the City to plan coordination of construction activities. The City shall keep the Contractor informed of the planned activities of other contractors.

Where one contractor's operations are within the limits or adjoin the operations of another contractor, each shall be responsible to the other for any damage, injury, loss, or expense which may be suffered on account of interference of operations, neglect or failure to finish work at the proper time, or of any other cause.

Differences and conflicts arising between the Contractor and other contractors employed by the City or between the Contractor and the workers of the City with regard to their work shall be submitted to the Construction Manager for his/her decision in the matter. If such separate contractor files a claim against the City on account of any delay or damage alleged to have been caused by the Contractor, the City shall notify the Contractor who shall, at the City's election, defend such claims at the Contractor's expense. If any judgment or award against the City arises from any such claim whether defended by City or by Contractor, the Contractor shall pay or satisfy said judgment or award and shall reimburse the City for all fees, including attorneys' fees, and costs which the City has incurred or for which it is liable.

2.6.8 PERMITS

Unless specifically stated in the Special Conditions to be provided by the City, the Contractor shall apply for, obtain, and comply with all terms, conditions and requirements attached to all permits, licenses, and agreements required by federal, state, or local agencies to perform work, construct, erect, test and start up any equipment or facility for this Contract. The City will provide, at no cost to the Contractor, the City "Building Permit" and/or the City "Engineering Permit". Where operating permits are required, the Contractor shall apply for and obtain such operating permits in the name of the City and provide the permit in an appropriate file folder when the City accepts substantial completion of the equipment or facility. The Contractor shall give all notices necessary or incidental to the due and lawful prosecution of the Work.

The Contractor shall apply for and obtain in its name all necessary permits and shall be responsible for satisfying all code requirements, calling for inspections, and obtaining final approvals. Code inspections will be coordinated with the Construction Manager. The Contractor shall comply with all conditions stipulated in the permits. The Contractor shall include in its Bid the fees for any permits and inspections that are required.

The Contractor shall also apply for and obtain all safety permits for excavations, tunneling, trenches, construction (building structure, scaffolding, or false work) and demolition required by OSHA. Any permits, licenses, agreements, and fees therefore required for the performance of work under this Contract and not specifically mentioned herein as having been obtained and paid by the City shall be included in the Contractor's Bid price. The cost of inspections associated with complying with permits, licenses, and agreements are to be included in the bid price. No time extensions shall be granted for time lost due to violations of permits.

The Contractor shall submit copies of all required Permits to the Construction Manager prior to proceeding with the Work covered by the respective Permits. If copies of all required Permits are not submitted to the Construction Manager prior to proceeding with the Work covered by the respective Permits, the Construction Manager may suspend the Work on the entire project, without any additional time or compensation to the Contractor, until the copies of the Permits are received.

2.6.9 CONTRACTOR'S RESPONSIBILITY FOR THE WORK AND MATERIALS

Until final acceptance of the Work, the Contractor shall have the charge and care of the Work and of the materials to be used therein, the Contractor shall bear the risk of injury, loss, or damage to any part

thereof (regardless of whether partial payments have been made on such damaged portions of the Work) by the action of the elements or from any other cause, whether or not arising from the non-execution of the Work. The Contractor shall rebuild, repair, restore, and make good all injuries, losses, or damages to any portion of the Work or the materials occasioned by any cause, before its completion and acceptance, and shall bear the expense thereof, except for such injuries, losses, or damages as are directly and proximately caused by acts of the City. Where necessary to protect the work or materials from damage, the Contractor shall, at his/her expense, provide suitable drainage and erect such temporary structures as are necessary to protect the work or materials from damage. The suspension of work or the granting of an extension of time from any cause whatever shall not relieve the Contractor of his/her responsibility for the work and materials as herein specified.

In an emergency affecting the safety of life or property, including adjoining property, the Contractor, without special instruction or authorization, is authorized to act at his/her discretion to prevent such threatened loss or injury.

2.6.10 SURVEYS, LINES AND GRADES

The Contractor shall be responsible for all construction surveying and the setting of all construction control stakes. All construction surveying must be performed by the designated Project Surveyor who shall be a Nevada Licensed Professional Land Surveyor, or the Surveyor's subordinates. Contractor shall provide the name, license number and contact information of the Project Surveyor to the Construction Manager prior to the start of Work.

The Contractor shall be responsible for directing the Project Surveyor to establish all the survey control staking to accomplish the Work within the tolerances established in the Technical Specifications and per the requirements of the Nevada Administrative Code, for Construction Surveys, Sections 625.760 through 625.780.

2.6.11 LAWS TO BE OBSERVED

The Contractor shall keep fully informed of existing and pending county, state, and national laws and regulations and all municipal ordinances and regulations of the City which in any manner affect those engaged or employed in the Work and of all such orders and decrees of bodies having any jurisdiction or authority over the same. The Contractor shall protect and indemnify the City and its officers, agents, employees, and volunteers against any claim or liability arising from or based on the violation of any such laws, ordinances, regulations or orders, whether by the Contractor or its employees. If any discrepancy or inconsistency is discovered in the drawings, specifications or Contract for the Work in relation to any such law, ordinance, regulations, order or decree, the Contractor shall immediately report the same to the Construction Manager in writing.

The Contractor shall comply with all Federal, State and local laws relative to conducting business in Carson City including, but not limited to, licensing, labor and health laws, and applicable NRS. The laws of the State of Nevada will govern as to the interpretation, validity and effect of the Bid, its award, and the Contract.

A. Certified Payrolls - If Prevailing Wage Rates are Required

The Contractor and each subcontractor shall keep an accurate payroll record, showing the name, address, work classification, straight time, and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker, or other employee employed in connection with the Project.

The payroll records shall be certified and shall be submitted weekly to the Construction Manager. Submission of the certified payrolls shall be a condition precedent for processing the monthly progress payment. The General Contractor shall collect the wage reports from the Sub-Contractors and ensure the receipt of a certified copy of each weekly payroll for submission to the City as one complete package.

Pursuant to NRS 338.060 and 338.070, the Contractor hereby agrees to forfeit, as a penalty to the City, not less than Twenty Dollars ($20) nor more than Fifty Dollars ($50) for each calendar day or portion thereof that each worker employed on the Contract is paid less than the designated rate for any work done under the Contract, by the Contractor or any subcontractor under him/her, or is not reported to the City as required by NRS 338.070.

2.6.12 SAFETY

A. Contractor's Safety Responsibility

The Contractor shall be solely and completely responsible for conditions of the job site, including safety of all persons and property during performance of the Work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA) Standards, the Nevada Occupational Safety and Health Act, and all other applicable Federal, State, County, and local laws, ordinances, codes, the requirements set forth below, and any regulations that may be detailed in other parts of these Contract Documents. Where any of these are in conflict, the more stringent requirement shall be followed.

No provision of the Contract Documents shall act to make the City, the Construction Manager or any party other than the Contractor responsible for safety. The Construction Manager shall not have authority for safety on the Project. The Contractor shall indemnify, defend (not excluding the City's right to participate) and hold harmless the City, Construction Manager, or other authorized representatives of the City, from and against any and all actions, damages, fines, suits, and losses arising from the Contractor's failure to meet all safety requirements and/or provide a safe work site.

If death or serious injuries or serious damages are caused, the accident shall be reported immediately to the Construction Manager, the City and OSHA. In addition, the Contractor must promptly report in writing to the Construction Manager all accidents whatsoever arising out of, or in connection with, the performance of the Work whether on, or adjacent to, the site giving full details and statements of witnesses. The Contractor shall make all reports as are, or may be, required by any authority having jurisdiction, and permit all safety inspections of the Work being performed under this Contract.

If a claim is made by anyone against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the facts in writing to the Construction Manager, giving full details of the claim.

B. Safety Program

The Contractor shall establish, implement, and maintain a written injury prevention program. Before beginning the Work, the Contractor shall prepare and submit to the Construction Manager a Safety Program that provides for the implementation of all of the Contractor's safety responsibilities in connection with the Work at the site and the coordination of that program and its associated procedures and precautions with safety precautions and procedures of each of its subcontractors. The Contractor shall be solely responsible for initiating, maintaining, monitoring, coordinating, and supervising all safety programs, precautions, and procedures in connection with the Work and for coordinating its programs, precautions, and procedures of any other prime Contractors and subcontractors performing work at the site.

C. Safety Supervisor

The Contractor shall appoint an employee as Safety Supervisor who is qualified and authorized to supervise and enforce compliance with the Safety Program. The Contractor shall notify the Construction Manager in writing prior to the commencement of work of the name of the person who will act as the Contractor's Safety Supervisor.

D. Excavation Safety

The Contractor shall submit, in advance of excavation five feet or more in depth, detailed plans showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from hazard of caving ground during such excavation, and protection to adjacent structures during such excavation. Design calculations and plans must be sealed by a Civil or Structural Engineer registered in the State of Nevada.

Prior to commencing any excavation, the Contractor shall designate in writing to the Construction Manager the "Competent Person(s)" with the authority and responsibilities designated in the Construction Safety Orders.

E. Emergencies

In emergencies affecting the safety or protection of persons, the Work, or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Construction Manager, is obligated to act to prevent threatened damage, injury or loss. The Contractor shall give the Construction Manager prompt notice if the Contractor believes that any changes in the Work or variations from the Contract Documents have been caused thereby. The Contractor shall not resume construction during an emergency, or after an emergency until directed to by the Construction Manager.

F. Safety Violations

The City shall have the authority to require the removal from the Project of any employee in responsible charge of the Work where safety violations occur.

2.6.13 FIRE PREVENTION AND CONTROL

Before setting any fires whatsoever, the Contractor shall notify the responsible Federal, State, or local agency having jurisdiction for the area concerned. The Contractor shall abide by such rules and instructions as to fire prevention and control and as to the place for burning as the Federal, State, or local agency having jurisdiction may prescribe. The Contractor shall take all necessary steps to prevent his/her employees from setting fires not required in the prosecution of the work. The Contractor shall be responsible for preventing the escape of fires set in connection with the work and shall under the direction of the appropriate agency, or, in the absence of an officer from any such agency, acting independently, extinguish all fires which may escape the work, whether or not set directly or indirectly as a result of his/her operations.

The Contractor shall be fully responsible for any damage caused to public and/or private property as a result of his/her burning operations, and shall leave no fires unattended at any time during these operations. He/She shall have available at the site at all times when burning is in progress, adequate equipment to extinguish the fires set by him/her, and to control the spread of fire outside of the burning areas. Burning during high wind conditions shall be expressly prohibited in order to prevent fire hazard, regardless of the prevailing season.

2.6.14 ERRORS OR DISCREPANCIES NOTED BY CONTRACTOR

It is the duty of the Contractor to promptly notify the Construction Manager in writing of any design, materials, or specified method that the Contractor believes may prove defective or insufficient. If the Contractor believes that a defect or insufficiency exists in design, materials, or specified method and fails to promptly notify the Construction Manager in writing of this belief, the Contractor waives any right to assert that defect or insufficiency in design, materials, or specified method at any later date in any legal or equitable proceeding against the City, or in any subsequent arbitration or settlement conference between the City and the Contractor.

The Construction Manager, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after he/she comes to the belief that a defect or insufficiency exists in materials, or specified method which is directly or indirectly affected by such alleged defect or insufficiency in design, materials, or specified method will be at his/her own risk and he/she shall bear all costs arising therefrom.

If the Contractor, either before commencing work or in the course of the work, finds any discrepancy between the specifications and the plans or between either of them and the physical conditions at the site of the work or finds any error or omission in any of the plans or in any survey, he/she shall promptly notify the Construction Manager of such discrepancy, error, or omission. If the Contractor observes that any plans or specifications are at variance with any applicable law, ordinance, regulation, order, or decree, he/she shall promptly notify the Construction Manager in writing of such conflict. The Construction Manager, on receipt of any such notice, will promptly investigate the circumstances and give appropriate instructions to the Contractor. Until such instructions are given, any work done by the Contractor after his/her discovery of such error, discrepancy, or conflict will be at his/her own risk and he/she shall bear all costs arising therefrom.

2.6.15 INDEMNIFICATION

The Contractor hereby agrees to indemnify, hold harmless, and defend, not excluding the City's right to participate, the Construction Manager, the City and its elected officials, officers, employees, agents, volunteers, other retained consultants and representatives, from and against any and all liability, claims, actions, damages, legal or administrative proceedings, losses and expenses, including without limitations, reasonable attorney's fees and costs (including attorney's fees in establishing indemnification of whatsoever nature), litigation costs, penalties, fines, judgments, or decrees by reason of any death, injury or disability to or of any person and/or damages to any property or business, including loss of use, arising out of any alleged negligent or willful acts, errors or omissions of the Contractor, Contractor's employees, agents, or subcontractors arising out of or suffered, directly or indirectly, by reason of or in connection with the performance of the Work under this Contract.

The Contractor guarantees the payment of all claims for materials, supplies and labor, and all other claims against it or any subcontractor, made in connection with this Agreement.

2.6.16 INSPECTIONS

The right of inspection and acceptance or rejection of contracted work by the City shall not make the Contractor an agent of the City, and the liability of the Contractor for all damages to persons or to public or private property, arising from the Contractor's execution of the work, shall not be lessened because of such inspections.

2.6.17 CONTRACTOR IS AN INDEPENDENT CONTRACTOR

This Contract does not create an employee/employer relationship between the parties. It is the parties' intention that the Contractor will be an independent contractor and not Carson City's employee for all purposes, including but not limited to the application of the Fair Labor Standards Act, the Federal Unemployment Tax Act, the provisions of the Internal Revenue Code, and Nevada State revenue and taxation laws. The Contractor will retain sole and absolute discretion in the judgment of the manner and means of carrying out the Contractor's activities and responsibilities hereunder. The Contractor agrees that it is a separate and independent enterprise from the public employer, that it has full opportunity to find other business, that it has made its own investment in its business and that it will utilize industry standard of care necessary to perform the Work. This Contract shall not be construed as creating any joint employment relationship between the Contractor and the City, and the City will not be liable for any obligation incurred by the Contractor, including but not limited to unpaid minimum wages and/or overtime premiums.

2.6.18 VALUE ENGINEERING PROPOSALS

Value Engineering Proposals (VEP) may be submitted by the Contractor in writing for modifying the plans, specifications or other requirements of the Contract for the purpose of reducing the total cost of construction without reducing design capacity or quality of the finished product. If accepted, net savings resulting from a VEP will be shared by the City and the Contractor on a 50%-50% basis.

GENERAL CONDITIONS

The requirements herein apply to all VEP's initiated and developed by the Contractor and which are identified as such at the time of submission. Nothing herein shall be construed as requiring consideration or approval of a VEP submitted hereunder.

Each VEP shall result in a net savings over the Contract costs without impairing essential functions and characteristics of the item(s) or of any other part of the project, including but not limited to environmental considerations, service life, reliability, economy of operation, ease of maintenance, desired aesthetics and safety.

Submit the following information with each VEP:

5) A statement that the proposal is submitted as a VEP;

6) A statement concerning the basis for the VEP and benefits to the City together with an itemization of the Contract requirements affected by the VEP;

7) A detailed estimate of the cost under the existing Contract and under the VEP;

8) Proposed specifications and recommendations as to how such VEP changes are to be accomplished; and

9) A statement as to the time by which a Contract Change Order adopting the VEP must be issued so as to obtain the maximum cost effectiveness.

The VEP will be processed in the same manner as prescribed for any other proposal which would necessitate issuance of a Contract Change Order. The City may accept in whole or in part any VEP by issuing a Contract Change Order which will identify the VEP on which it is based. The City will not be liable for failure to accept or act upon any VEP submitted pursuant to these requirements nor for any delays to the work attributable to any such proposal. Until a proposal is effected by Contract Change Order, Contractor remains obligated to perform under the terms and conditions of the Contract. If an executed Contract Change Order has not been issued by the date upon which the proposal specifies that a decision thereon should be made, or such date as the Contractor may have subsequently specified in writing, such proposal shall be deemed rejected.

The Contract Change Order effecting the necessary Contract modification will establish the net savings agreed upon, will provide for adjustment in the Contract prices and will indicate the new savings to be equally divided between the City and the Contractor. Contractor shall absorb all costs incurred in preparing a VEP for submission. All reasonably incurred costs of reviewing and administering the VEP will be borne by the City. The City reserves the right to include in the agreement any conditions it deems appropriate for consideration, approval, and implementation of the proposal. The Contractor's 50% share of the net savings shall constitute full compensation to him/her for effecting all changes pursuant to the agreement.

Acceptance of the VEP and performance of the work thereunder will not change the Contract time limit as a result of the VEP, unless specifically provided for in the Contract Change Order authorizing the VEP.

Proposed changes in the basic design of a bridge or pavement type, traffic control plan, or changes which require different right-of-way limits, will not normally be considered as an acceptable VEP.

The Construction Manager shall be the sole judge of the acceptability of a VEP.

Subject to the provisions contained herein, the City or any other public agency shall have the right to use all or part of any accepted VEP without obligation or compensation of any kind to the Contractor.

In the event a VEP is accepted by the City, the provisions of General Conditions Section 6.4.4, Unit Price Adjustments Due to Increased or Decreased Quantities, which pertain to adjustment of Contract unit prices due to alterations of Contract quantities, will not apply to items adjusted or deleted as a result of effecting the VEP by Contract Change Order.

SECTION 3.0 PROGRESS OF WORK, MEETINGS, SCHEDULES

GC 3.1 BEGINNING OF WORK

The Contractor shall begin work within ten (10) calendar days of the effective date of the Notice to Proceed and shall diligently prosecute the same to completion within the Contract Time.

GC 3.2 PERFORMANCE OF THE WORK

Unless otherwise specified in the Special Conditions, the Contractor shall furnish all materials, labor, permits, tools, equipment, water, light, power, transportation, superintendence, temporary construction of every nature, and incidentals, including but not limited to, dust and traffic control measures, and to perform all work involved in executing the Contract in a satisfactory and workmanlike manner within the time specified.

GC 3.3 PLANS AND SPECIFICATIONS FURNISHED BY THE CITY

The City will furnish to the Contractor, free of charge, up to five (5) copies of the contract drawing and specifications. Additional sets shall be provided by the City at cost of the City's standard billing rate for labor of reproduction and the cost of reproduction itself. The five (5) sets of plans and specifications shall be available to the Contractor at the time he/she takes out the Carson City permit at the City's One Stop Permit Center located at the Building Department, 2621 Northgate Lane, Suite 6.

The location of the Work, its general nature and extent, and the form and detail of the various features are shown on the Contract Drawings accompanying and made a part of these Contract Documents.

GC 3.4 ORDER OF WORK

When required by the Contract Documents, the Contractor shall follow the sequence of operations as set forth therein. Full compensation for conforming with such requirements will be considered as included in the prices paid for the various Contract items of work and no additional compensation will be allowed therefore.

GC 3.5 TIME OF COMPLETION

Time shall be of the essence of the Contract. The Contractor shall diligently prosecute the Work so that the various portions of the Project shall be complete and ready for use within the time specified. It is expressly understood and agreed by and between the Contractor and the City that the Contract Time for completion of the Work described herein is a reasonable time taking into consideration the average climatic and economic conditions and other factors prevailing in the locality and the nature of the Work.

Failure of the Contractor to perform any covenant or condition contained in the Contract Documents within the time period specified shall constitute a material breach of this Contract entitling the City to terminate the Contract unless the Contractor applies for, and receives, an extension of time in accordance with the procedures set forth in GC 3.15, EXTENSION OF TIME.

Failure of the City to insist upon performance of any covenant or condition within the time period specified in the Contract Documents shall not constitute a waiver of the Contractor's duty to complete the performance within the designated periods unless the City has given a waiver in writing.

The City's agreement to waive a specific time provision or to extend the time for performance shall not constitute a waiver of any other time provision contained in the Contract Documents. Failure of the Contractor to complete the performance promptly within any additional time authorized or in any waiver or extension of time shall constitute a material breach of this Contract entitling the City to terminate.

GC 3.6 MEANS AND METHODS

It is expressly stipulated that the drawings, specifications, and other contract documents set forth the requirements as to the nature of the completed Work and do not purport to control the method of performing work except in those instances where the nature of the completed Work is dependent upon the method of performance.

Neither the City, Design Consultant, nor the Construction Manager will be responsible for or have control or charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work. Neither the City, Design Consultant nor the Construction Manager will be responsible for or have control or charge over the acts or omissions of the Contractor, or any of their subcontractors, agents or employees, or any other persons performing any of the Work. Any general control of the Work exercised by the City or its authorized representatives shall not make the Contractor an agent of the City, and the liability of the Contractor for all damages to persons and/or to public or private property arising from the Contractor's execution of the Work shall not be lessened because of such general control.

Neither the inspection by the City, Design Consultant, or Construction Manager, nor any order, measurement, approved modification, or payment of monies, nor acceptance of any part or whole of the Work by the City, Design Consultant, Construction Manager, or their agents shall operate as a waiver of any provision of the Contract.

GC 3.7 CITY-FURNISHED MATERIALS

Only materials and equipment specifically indicated in the Contract Documents shall be furnished by the City and such materials and equipment will be made available as designated in the Special Conditions. The Contractor shall be prepared to load or unload and to properly protect all such material and equipment from damage or loss. The cost of loading, unloading, hauling, handling, demurrage and storage, and placing City-furnished materials into the Work shall be considered as included in the price bid for the Contract item involving such City-furnished material.

Contractor shall inspect and assure itself of the amount and soundness of such material or equipment at the time of receiving such materials. Any City-furnished material or equipment lost or damaged from any cause after the Contractor has taken control of said material or equipment, shall be replaced by the Contractor at his/her expense.

GC 3.8 DEFECTIVE AND UNAUTHORIZED WORK

Any materials or workmanship which does not conform to the requirements of the Contract Documents shall be considered defective and shall be remedied or removed and replaced by the Contractor, together with any other work which may be displaced in so doing, and no additional compensation will be allowed to the Contractor for such removal, replacement, or remedial work. All nonconforming materials shall be immediately removed from the Site.

Any work done beyond the limits of work, lines, and grades shown on any approved plans or established by the Construction Manager, or any changes in, additions to, or deductions from the work done without written authority, will be considered as unauthorized and will not be paid. Work so done may be ordered remedied, removed, or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply with any order of the Engineer made under the provisions of this Section, the Engineer shall have authority to cause nonconforming materials, rejected work, or unauthorized work to be remedied, removed, or replaced at the Contractor's expense and to deduct the costs from any monies due or to become due the Contractor.

These provisions shall have full effect regardless of the fact that the defective work may have been done or the defective materials used with the full knowledge of the Engineer or his/her representative. The fact that the Engineer may have previously overlooked such defective work shall not constitute an acceptance of any part of it. Nothing stated herein shall be deemed to shorten the term of any statute of limitations applicable to claims which the City may have against the Contractor.

GC 3.9 PRE-CONSTRUCTION CONFERENCE

The Construction Manager will schedule a Pre-Construction Conference at the Project site or other established location at the time of Notice to Proceed and/or execution of the Contract and prior to commencement of construction activities.

3.9.1 ATTENDEES

The City, Design Consultant, Construction Manager, Contractor and its superintendent, subcontractors, and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.

3.9.2 AGENDA

The Construction Manager will prepare an agenda for discussion of significant items relative to Contract requirements, procedures, coordination and construction. Minutes shall be kept by the Construction Manager and distributed to all attendees.

GC 3.10 PROGRESS MEETINGS

The Construction Manager will conduct progress meetings at the Project site or other established location at regularly scheduled intervals which may be as frequent as weekly. Frequency of meetings shall be determined at the Pre-Construction Conference. Meeting minutes will be taken and distributed by the Construction Manager.

3.10.1 ATTENDEES

The City, Design Consultant, Construction Manager, Contractor, and its superintendent may each be represented at these meetings. Attendance by subcontractors, suppliers, utilities and other entities is subject to issues and/or items of the agenda which may require attendance.

3.10.2 AGENDA

Agenda may include, but not necessarily be limited to: review, correct or approve minutes of the previous progress meeting, review of items of significance that could affect progress, review/discuss topics as appropriate to the current and future status and/or needs of the Project, review the progress of the Work in the preceding week and in the subsequent week, coordinate the Work with public agencies and/or other Contractors as required, and allow the Construction Manager to plan his/her activities for testing, inspection, etc.

GC 3.11 CONSTRUCTION SCHEDULES

Construction schedules are required for all Contracts. The type of construction schedule required, that is, Construction Schedule (A) or Construction Schedule (B) will be specified in the Special Conditions. Compensation for the Work under this item will be included within the other bid items.

3.11.1 CONSTRUCTION SCHEDULE (A)

A. General

The schedule shall be submitted at the Pre-Construction Conference and must be favorably reviewed by the Construction Manager and the City before the first partial payment can be made. NOTE: The Construction Schedule must include and account for the total contract time specified in the Contract Documents.

B. Base Schedule

The Contractor shall submit the schedule based on either the bar chart method or the Critical Path Method (CPM). The schedule shall indicate preceding activity relationships and/or restraints where applicable and a controlling path shall be indicated. The schedule shall be time-scaled and shall be drafted to show a continuous flow from left to right. The construction schedule shall clearly show the sequence of construction operations and specifically list:

1. The start and completion dates of primary work items or components.

2. The dates of submittals, procurement, delivery, installation and completion of each major equipment and material requirement.

3. Progress milestone events or other significant stages of completion.

4. The lead time required for testing, inspection and other procedures required prior to acceptance of the Work.

5. All activities, other than procurement activities, shall be cost-loaded. Activities shall be no longer than 14 calendar days, except for submittals and delivery items. If an activity takes longer, it shall be broken into appropriate segments of work for measurement of progress. This limitation may be waived, upon approval of the Construction Manager, for repetitious activities of longer durations for which progress can be easily monitored.

C. Reports

The Bar Charts or CPM Schedules shall be prepared as follows:

1. Bar Chart: A manually generated report which lists each primary activity description, early start and finish dates, and all preceding and succeeding activities. Report shall indicate all critical activities. A report with the above information shall be provided with each monthly update.

2. CPM Schedule: A CPM network report sorted by I-J or activity number which lists each activity description, early start and finish dates, preceding and succeeding activities and restraints, including lead/lag durations. The report shall show the critical path.

   $ CPM network report sorted by total float.
   $ CPM network report sorted by early start.

3.11.2 CONSTRUCTION SCHEDULE (B)

A. General

The Construction Schedule under this requirement will also be referred to as the CPM Schedule.

The Contractor shall designate, in writing, an authorized representative in its firm who will be responsible for the preparation, revising, and updating of the CPM Schedule. The Contractor's representative shall have direct Project control and complete authority to act on behalf of the Contractor in fulfilling the construction scheduling requirements set forth herein, and such authority will not be interrupted throughout the duration of the Project. The requirements for the CPM Schedule are included to assure adequate planning and execution of the Work and to assist the Construction Manager and the City in appraising the reasonableness of the proposed schedule and evaluating progress of the Work.

Within seven (7) days from award of the Contract, the Contractor shall submit to the Construction Manager demonstration of competence in the use of CPM Scheduling, including evidence of the use of CPM Scheduling on a project of similar value and complexity. In the event of the failure of the Contractor to satisfy the Construction Manager of its CPM Scheduling competence, the Contractor will be required to employ a qualified CPM consultant who regularly performs these services and who in the opinion of the Construction Manager possesses the qualifications required to perform CPM Scheduling for this Project.

B. Preliminary Construction Schedule

At the Pre-Construction Conference, the Contractor shall submit copies of a Preliminary Construction Schedule in the form of a precedence diagram covering the following Project phases and activities:

1. Procurement and Submittals, including shop drawings, fabrication, and delivery of key and long lead time procurement activities.

   a. The Contractor's submittal information shall show intended submittal dates and shall be incorporated into the base project schedule.

   b. The delivery information shall include realistic delivery dates for the procurement activities.

2. The activities planned for the first 90 days in the execution of the Work.

3. The approach to scheduling the remaining activities or phases of the Work. The Work for each phase or activity shall be represented by at least one summary activity and the sum of the summary activities shall equal the Contract Time.

4. Approximate cost and duration for each summary activity representing the Contractor's best estimate for the Work the summary activity represents.

5. Projected monthly cash flow.

C. Base Schedule Submittal

The Contractor shall submit an acceptable Critical Path Method (CPM) Schedule to the Construction Manager within thirty (30) days after the receipt of the Notice to Proceed. Subsequent revisions to said schedule shall be submitted as set forth hereinafter.

The Construction Manager shall review the schedule and provide any comments, its favorable review of the schedule, or request a meeting to review the schedule with the Contractor within fifteen (15) days of receipt of the schedule. If requested, the Contractor shall participate in a review and evaluation of the proposed network diagrams and analysis by the Construction Manager. Any revisions necessary as a result of this review shall be resubmitted for review by the Construction Manager within ten (10) days. When completed, the favorably reviewed schedule shall then be the schedule to be used by the Contractor for planning, organizing, and directing the Work, and for reporting progress. If the Contractor thereafter desires to make significant changes in its method of operating and scheduling, the Contractor shall notify the Construction Manager in writing stating the reasons for the change. Only one progress payment will be made prior to acceptance of the CPM Schedule. Neither the Contractor nor the City shall own the "float".

To the extent that the favorably reviewed initial Construction Schedule, or revisions thereto, indicate anything not jointly agreed upon, it shall be deemed to be not favorably reviewed by the Construction Manager. Any omission of work from the detailed schedule, otherwise required for Contract compliance, will not excuse the Contractor from completing such work within any applicable completion date.

The CPM Schedule shall utilize a (CPM) format using either the precedence or arrow diagramming method. The schedule shall show completion of the Project at the Contract Completion Date or before.

The schedule shall be computer generated utilizing a scheduling program identified in the Special Conditions. The Contractor shall provide a compact disk or other electronic means approved by the Construction Manager for the initial base schedule and all monthly updates with the network

diagram and mathematical analyses. The program shall be capable of accepting revised completion dates as modified by approved time adjustments and re-computations of all tabulation date and float accordingly. The CPM schedule system shall consist of diagrams and accompanying mathematical analyses network diagram. See Special Conditions for further details regarding scheduling requirements.

D. Cash Flow Projection

A cash flow projection shall be submitted with the Construction Schedule. This cash flow projection shall be revised and resubmitted when revisions of the Construction Schedule will result in significant changes to the projected cash flow.

GC 3.12 NOTICE OF DELAYS

When the Contractor foresees a delay in the prosecution of the Work and, in any event, within seventy-two (72) hours of a delay, the Contractor shall notify the Construction Manager in writing of the probability of the occurrence, the estimated or actual extent of the delay, and its cause. The Contractor shall take immediate steps to prevent, if possible, the occurrence or continuance of the delay. The Contractor agrees that no claim shall be made for delays which are not called to the attention of the Construction Manager within the time specified above.

Except for Standby Time for City utilities as provided for in GC 7.10, COORDINATION/COOPERATION WITH UTILITIES, the Contractor's sole remedy for any delay in the Work, regardless of the alleged cause of the delay, shall be an extension of the contract time; the Contractor shall not be entitled to any delay damages, wage escalation, material escalation, extended job site or home office overhead or supervision, or additional compensation of any kind.

3.12.1 NON-EXCUSABLE DELAYS

Non-excusable delays in the prosecution of the Work shall include delays which could have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its subcontractors, at any tier level, or suppliers. Time lost due to violations of permit requirements shall be non-excusable delays. No time extension or other compensation shall be granted for time lost due to non-excusable delays.

3.12.2 EXCUSABLE DELAYS

Excusable delays in the prosecution or completion of the Work shall include delays which result from causes beyond the control of the Contractor and which could not have been avoided by the exercise of care, prudence, foresight, and diligence on the part of the Contractor or its subcontractors, at any tier level, or suppliers.

Delays caused by acts of God, fire, unusual storms, floods, earthquakes, strikes, labor disputes, freight embargoes, and shortages of materials shall be considered as excusable delays insofar as they prevent the Contractor from proceeding with at least seventy-five (75) percent of the normal labor and equipment force for at least five (5) hours per day toward completion of the current critical activity item(s) on the latest favorably reviewed Construction Schedule.

Excusable delays shall not entitle the Contractor to any additional compensation. The sole remedy of the Contractor shall be to seek an extension of time.

3.12.3 STANDBY TIME

As provided in GC 7.10, COORDINATION/COOPERATION WITH UTILITIES, if the Contractor is delayed due to the City's non-marking, mis-marking or mis-locating the City's main line water mains, reclaimed water mains, sanitary sewer main lines and storm drains, the City will be responsible for repairs, damages and standby time caused the Contractor. Compensation to the Contractor for such repairs, damages or standby time shall be calculated on the basis of GC 6.4.3, FORCE ACCOUNT PAYMENT. Note: this provision does not apply to service laterals/connections.

Also Note: per NRS 455.082, the approximate location of a subsurface installation marked in response to a request of USA means a strip of land not more than 24 inches on either side of the exterior surface of a subsurface installation.

3.12.4 WEATHER DELAYS

Should inclement weather conditions or the conditions resulting from weather prevent the Contractor from proceeding with seventy-five (75) percent of the normal labor and equipment force engaged in the current critical activity item(s) on the latest favorably reviewed Construction Schedule for a period of at least five (5) hours per day toward completion of such operation or operations, and the crew is dismissed as a result thereof, it shall be a weather delay day. The Contractor may be granted a non-compensable time extension should the critical path activities be affected by the weather delay.

3.12.5 CONCURRENT DELAYS

Concurrent delays are those delay periods when the prosecution of the Work is delayed during the same period of time due to causes from a combination of the delays, City-caused and Contractor-caused. Time extensions will be granted on the basis of a time impact analysis from the CPM Schedule.

GC 3.13 LIQUIDATED DAMAGES

It is agreed by the parties to the Contract that time is of the essence in the completion of this Work, and that in case all the Work called for under the Contract is not completed before or upon the expiration of the time limit as set forth in these Contract Documents, or as modified by extensions of time granted by the City, damage will be sustained by the City. As it may be impracticable to determine the actual delay damage; it is, therefore, agreed that the Contractor shall pay liquidated damages to the City in the amount set forth in the Construction Contract, per calendar day for each and every calendar day's delay beyond the time prescribed to complete the Work. The Contractor agrees to pay such liquidated damages and in case the same are not paid, agrees that the City may deduct the amount thereof from any monies due or that may become due the Contractor under the Contract.

The Contractor shall not be deemed in breach of this Contract nor shall liquidated damages be collected because of any delays in the completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor provided the Contractor requests an extension of time in accordance with the procedures set forth in GC 3.15, EXTENSION OF TIME. Unforeseeable causes of delay beyond the control of the Contractor shall include Acts of God, acts of a public enemy, acts of government, or acts of the City, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and weather, or delays of subcontractors due to such causes, or delays caused by failure of the City or the facilities.

GC 3.14 RIGHTS BEYOND LIQUIDATED DAMAGES

Liquidated damages shall not preclude the City from claiming and collecting damages on account of delay, price changes, loss of other contracts, loss of income, and or any inability of the City to fulfill other obligations, if such damages are direct or consequential arising out of the failure of the Contractor to perform under the terms, conditions and requirements of this Contract.

GC 3.15 EXTENSION OF TIME

The time specified for completion of all of the Work or any part of the Work may be extended only by a written change order executed by the City. The Construction Manager may, at his/her discretion, recommend that the City extend the time for completion of the Work without invalidating any of the provisions of the contract and without releasing the surety.

Extensions of time, when recommended by the Construction Manager, will be based upon the effect of delays to the project as a whole and will not be recommended for non-controlling delays to minor portions of the Work, unless it can be shown that such delays did, in fact, delay progress of the project as a whole. Excusable delays may justify an extension of time.

No extension of time for completion will be allowed for non-excusable delays.

Written requests for an extension of time must be delivered to the Construction Manager within seventy-two (72) hours following the date of the occurrence which caused the delay. The request must state the cause of the delay, the date of the occurrence causing the delay, and the amount of additional time requested. The delay causing condition must affect an activity on the critical path of the latest favorably reviewed Construction Schedule. Requests for extensions of time shall be supported by all evidence reasonably available or known to the Contractor which would support the extension of time requested. Requests for extension of time failing to include the information specified in this Section, and requests for extensions of time which are not received within the time specified above, shall result in the forfeiture of the Contractor's right to receive any extension of time requested.

If the Contractor is requesting an extension of time because of a weather delay, Contractor shall supply daily reports to the Construction Manager describing such weather and the work which could not be performed that day because of such weather or conditions resulting therefrom and which Contractor otherwise would have performed. The City's acceptance of the daily reports shall not be deemed an admission of the Contractor's right to receive an extension of time or a waiver of the City's right to strictly enforce the time provisions contained in the Contract Documents.

When the Contractor has submitted a request for an extension of time in accordance with the procedures of this Section, the City will ascertain the facts and extent of the delay and extend the time for completing the Work if, in its judgment, the findings of fact justify such an extension, and its findings of fact thereon shall be final and conclusive. An extension of time may be granted by the City after the expiration of the time originally fixed in the Contract or as previously extended, and the extension so granted shall be deemed to commence and be effective from the date of such expiration.

GC 3.16 TEMPORARY SUSPENSION OF WORK

The City may order suspension of all or any part of the Work if:

(1) Unsuitable weather and such other conditions beyond the control of the Contractor prevent satisfactory and timely performance of the Work; or

(2) The contractor does not comply with the Contract or the Engineer's orders.

If the Work is suspended for reason (1) above, the period of work stoppage will be counted as non-working days. However, if the Construction Manager believes the Contractor should have completed the suspended work before the suspension, all or part of the suspension period may be counted as working days. The Construction Manager will set the number of non-working days (or parts of days) by deciding how long the suspension delayed the entire project. An extension of time may be granted. Also, the Contractor will be compensated for its actual costs plus the standard markup for overhead and profit for performing all work necessary to provide a safe, smooth, unobstructed passageway through the Site for use by the public, pedestrian and vehicular traffic during the period of such a suspension of work.

If the Work is suspended for reason (2) above, the period of work stoppage will be counted as working days and no extension of time will be granted. The lost work time, however, shall not relieve the Contractor from any contract responsibility.

If the Contractor fails to correct defective work as required, or fails to carry out the Work in accordance with the Contract Documents or any other applicable rules and regulations, the City, in writing, may order the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the City to stop the Work shall not give rise to any duty on the part of the City to exercise this right for the benefit of the Contractor or any other person or entity. All delays in the Work occasioned by such stoppage shall not relieve the Contractor of any duty to perform the Work or serve to extend the time for the Work completion. Any and all necessary corrective work done in order to comply with the Contract Documents shall be performed at no cost to the City. When ordered by the City to suspend or resume work, the Contractor shall do so immediately. In all cases of suspension of construction operations, the work shall not again be resumed until permitted by written order of the City.

In the event that a suspension of Work is ordered for reason (2) above, as provided in this Section, the Contractor shall perform all work necessary to provide a safe, smooth, and unobstructed passageway through the Site for use by public, pedestrian and vehicular traffic, during the period of such a suspension. Should the Contractor fail to perform the Work as specified, the City may perform such work and the cost thereof may be deducted from monies due the Contractor under the Contract. The Contractor will be responsible for all damage to the Work that may occur during suspensions of work. The Contractor will not be entitled to any additional compensation nor allowance for overhead or profit incurred in connection with this type of suspension.

GC 3.17 PROTECTION OF ANTIQUITIES

State and Federal laws pertaining to the protection and preservation of sites or objects of archeological, paleontological or historic interest shall be observed by the Contractor performing this Work.

When features of archeological, paleontological or historic interest are encountered or unearthed in material pits, the roadway prism, or other excavation, the Contractor shall stop work in the immediate vicinity of such feature, protect it from damage or disturbance, and report promptly to the State Historic Preservation Office at (775) 684-3448 and the Construction Manager.

Work shall not be resumed in the immediate area until the Contractor is advised by the authorities having jurisdiction that study or removal of the feature or features has been completed. The Contractor may be allowed an appropriate contract extension of time, as provided for in these General Conditions, for construction time lost.

GC 3.18 CONTRACT TERMINATION

If at any time the Contractor is determined to be in material breach of the Contract, notice thereof in writing will be served upon the Contractor and its sureties, and should the Contractor neglect or refuse to promptly provide means for satisfactory compliance with the Contract, within the time specified in such notice, the City in such case shall have the authority to terminate the operation of the Contract.

A. The City may terminate the Contract if the Contractor:

1. Fails to maintain bonding, Nevada State Contractor's Board License, State Industrial Insurance requirements or insurance policies for limits as defined in the Contract Documents;

2. Persistently or repeatedly refuses or fails to supply properly skilled workers or proper materials;

3. Fails to make payment to subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the subcontractors;

4. Persistently disregards laws, ordinances, or rules, regulations or order of a public authority having jurisdiction;

5. Otherwise makes a material breach of a provision of the Contract Documents; or

6. Contractor fails to maintain safe working conditions.

B. When any of the above reasons exist, the City may provide, without prejudice to any other rights or remedies of the City and after giving the Contractor and the Contractor's Surety, seven (7) days written notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

1. Take possession of the site and of all materials, equipment, tools and construction equipment and machinery thereon owned by the Contractor;

2. Accept assignment of subcontractors pursuant to this Contract for Construction (Contingent Assignment of Subcontracts to City if Contract is terminated); and,

3. Finish the Work by whatever reasonable method the City may deem expedient.

C. If the City terminates the Contract for one of the reasons stated in Termination by the City for Cause, the Contractor shall not be entitled to receive further payment until the Work is finished.

D. If the unpaid balance of the Contract Amount exceeds the cost of finishing the Work including expenses made necessary thereby, such excess shall be paid to the Contractor. If the costs of finishing the Work exceed the unpaid balance, the Contractor shall pay the difference to the City. The amount to be paid to the Contractor or City, as the case may be, shall survive termination of the Contract for Construction.

In the event of such termination, all monies due the Contractor or retained under the terms of this Contract shall be held by the City; however, such holdings will not release the Contractor or its sureties from liability for failure to fulfill the Contract. Any excess cost over and above the Contract Amount incurred by the City arising from the termination of the operations of the Contract and the completion of the Work by the City as provided above shall be paid for by any available funds held by the City. The Contractor will be so credited with any surplus remaining after all just claims for such completion have been paid.

If at any time before completion of the Work under the Contract, the Work shall be stopped by an injunction of a court of competent jurisdiction or by order of any competent authority, the City may give notice to the Contractor to discontinue the Work and terminate the Contract. The Contractor shall discontinue the Work in such manner, sequence, and at such times as the Construction Manager may direct. The Contractor shall have no claim for damages for such discontinuance or termination, nor any claim for anticipated profits on the Work thus dispensed with, nor for any claim for penalty, nor for any other claim such as unabsorbed overhead, except for the work actually performed up to the time of discontinuance, including any extra work ordered by the Construction Manager to be done.

GC 3.19 CITY'S RIGHT TO TERMINATE FOR CONVENIENCE

The City reserves the right to terminate this contract for convenience whenever it considers termination, in its sole and unfettered discretion, to be in the public interest. In the event that the Contract is terminated in this manner, payment will be made for work actually completed. In no event if termination occurs under this provision shall the Contractor be entitled to anticipated profits on items of work not performed as of the effective date of the termination or compensation for any other item, including but not limited to, unabsorbed overhead. The Contractor shall assure that all subcontracts which he/she enters related to this Contract likewise contain a termination for convenience clause which precludes the ability of any subcontractor to make claims against the Contractor for damages, due to breach of contract, of lost profit on items of work not performed or of unabsorbed overhead, in the event of a convenience termination.

GC 3.20 WORK DURING DISPUTES AND LITIGATION

In the event of a dispute between the parties hereto as to performance of the Work, the interpretation of this Contract, or payment or nonpayment for work performed, the parties shall attempt to resolve the dispute. If the dispute is not resolved, Contractor agrees to continue the Work diligently to completion and will neither rescind this Contract nor stop the progress of the Work but will submit such controversy to determination in accordance with the terms of the Contract Documents. In the event any litigation is commenced with respect to this Contract, such litigation shall not serve to suspend Contractor's obligation to continue performance of the Work hereunder.

GC 3.21 LANDS AND RIGHTS-OF-WAY

The lands and rights-of-way for the project to be constructed will be provided by the City. The Contractor shall make his/her own arrangements and pay all expenses for additional area required by him/her outside the limits of the City's land and right-of-way. Work in the public right-of-way shall be done in accordance with the requirements of the permit issued by the public agency in whose right-of-way the work is located in addition to conforming to the plans and specifications.

GC 3.22 WAIVER OF RIGHTS

Except as otherwise specifically provided in the Contract Documents, no action or failure to act by the City, Owner's Representative, Construction Manager or Contractor shall constitute a waiver of any right or duty afforded any of them under the Contract Documents, nor shall any such action or failure to act constitute an approval of or acquiescence in any breach thereunder.

SECTION 4.0 SHOP DRAWINGS AND QUALITY CONTROL/INSPECTIONS

GC 4.1 CONTRACTOR'S RESPONSIBILITIES

The Contractor shall submit, at its own expense, submittals and details of structural and reinforcing steel, concrete mix designs, coatings, equipment, material, electrical controls, architectural fabrications, pipe, pipe joints, special pipe sections, and other appurtenances as required in the Technical Specifications and Special Conditions of the Contract Documents. The contract Unit Bid Price for the various items requiring submittals shall include the cost of furnishing all shop drawings, product data, and samples, and the Contractor will be allowed no extra compensation for such drawings, product data or samples.

All submittals and supporting drawings, designs, calculation, data, catalogs, schedules, etc., shall be submitted as the instruments of the Contractor, who shall be responsible for their accuracy, completeness, and coordination. Such responsibility shall not be delegated in whole or part to subcontractors or suppliers. These submittals may be prepared by the Contractor, subcontractors, or suppliers, but the Contractor shall ascertain that submittals meet all of the requirements of the Contract Documents while conforming to structural, space, and access conditions at the point of installation. Designation of work "by others," if shown in submittals, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who prepared the submittals. The Contractor shall insure that there is no conflict with other submittals and notify the Construction Manager in each case where its submittal may affect the work of another Contractor or the City. The Contractor shall insure coordination of submittals among the related crafts and subcontractors.

Submittals shall be prepared in such form that data can be identified with the applicable Specification paragraph. The data shall clearly demonstrate compliance with the Contract Drawings and specifications and shall relate to the specific equipment to be furnished. Where manufacturer's standard drawings are employed, they shall be marked clearly to show what portion of the data is applicable to this Project.

GC 4.2 SOURCE OF MATERIALS

Unless otherwise approved in writing by the Construction Manager, only unmanufactured materials produced in the United States, and only manufactured materials made in the United States, shall be used in the performance of this contract.

GC 4.3 TRANSMITTAL PROCEDURES

4.3.1 TRANSMITTAL FORM

A separate transmittal form shall be used for each specific item, class of material, equipment, and items specified in separate, discrete sections for which the submittal is required. Submittal documents common to more than one piece of equipment shall be identified with all the appropriate equipment numbers. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole. The specification section to which the submittal is related shall be indicated on the transmittal form.

A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XXX"; where "XXX" is the sequential number assigned by the Contractor. Resubmittals shall have the following format: "XXX-Y"; where "XXX" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd, and 3rd resubmittals, respectively. Submittal 25B, for example, is the second resubmittal of submittal 25.

4.3.2 DEVIATIONS FROM THE CONTRACT

If the submittals show any deviations from the Contract requirements, the Contractor shall submit with the submittal submission a written description of such deviations and the reasons therefore. If the City accepts such deviation, the City shall issue an appropriate Contract Change Order, except that, if the deviation is minor, or does not involve a change in price or in time of performance, a Change Order may not be issued. If deviations from the Contract requirements are not noted on the submittal by the Contractor, the review of the shop drawing shall not constitute acceptance of such deviations.

4.3.3 SUBMITTAL COMPLETENESS

The Contractor shall check all submittals before submitting them to the Construction Manager and shall certify on the transmittal letter and on each shop drawing that they have been checked, are in compliance with the drawings and specifications, and all deviations from the Contract requirements are noted.

If the Contractor submits an incomplete submittal, the submittal may be returned to the Contractor without review. A complete submittal shall contain sufficient data to demonstrate that the items comply with the specifications, shall meet the minimum requirements for submissions cited in the Technical Specifications, shall include materials and equipment data and certifications where required, and shall include any necessary revisions required for equipment other than first named.

The City reserves the right to deduct monies from payments due the Contractor to cover additional actual costs of review beyond the second submission.

4.3.4 SUBMITTAL PERIOD

All submittals shall be submitted to the Construction Manager within fifteen (15) calendar days after the date of the Notice to Proceed by the City, unless the Construction Manager accepts an alternate schedule for submission of submittals proposed by the Contractor or unless provided for differently in the Special Conditions.

4.3.5 MATERIAL AND EQUIPMENT SUBSTITUTIONS

In preparing these specifications, the Design Consultant has named those products which to its knowledge meet the specifications and are equivalent in construction, functional efficiency, and durability.

Wherever catalog numbers and specific brands or trade names preceded by "similar and equal" or followed by the designation "or equal" are used in conjunction with a designated material, product, installation, or service mentioned in these specifications, they are used to establish the standards of quality and utility required. The Contractor may request, in writing, approval of any material, process or article which he/she believes to be equal. The written request shall state how the material, process, or article proposed for substitution compares with or differs from the designated material, process, or article in composition, size, arrangement, performance, and in addition, the request shall be accompanied by documentary evidence of equality in price and delivery or evidence of difference in price and delivery. Data on price shall be in the form of certified quotations from suppliers of both the designated and proposed material, process or article. If any material, process or article offered by the Contractor is not, in the opinion of the Engineer, equal or better in every respect to that specified, then the Contractor must furnish the material, process or article specified or one that, in the opinion of the Engineer, is the equal or better in every respect. In the event the Contractor furnishes material, process, or article more expensive than that specified, the difference in cost of such material, process, or article so furnished shall be borne by the Contractor. Pursuant to NRS, Chapter 338.140, data substantiating a request for substitution of "an equal" item shall be submitted within seven (7) days after Award of the Contract.

GC 4.4 REVIEW PROCEDURE

Submittals shall be submitted to the Construction Manager for review and will be returned to the Contractor within fifteen (15) working days after receipt, unless otherwise provided for in the Special Conditions. The primary objective of review of submittals by the City is the completion of the Project in full conformance with the Contract, unmarred by field corrections, and within the time provided. In addition to this primary objective, submittal review as a secondary objective will assist the Contractor in its procurement of equipment that will meet all requirements of the Project Drawings and specifications, will fit the structures detailed on the drawings, will be completed with

respect to piping, electrical, and control connections, will have the proper functional characteristics, and will become an integral part of a complete operating facility.

After review by the City of each of the Contractor's submissions, the material will be returned to the Contractor with actions defined as follows:

A. **No Exceptions Noted (Resubmittal Not Required)**
Accepted subject to its compatibility with future submissions and additional partial submissions for portions of the work not covered in this submission. Does not constitute approval or deletion of specified or required items not shown in the partial submission.

B. **Make Corrections Noted (Resubmittal Not Required)**
Same as A, except that minor corrections as noted shall be made by the Contractor.

C. **Make Corrections Noted (Resubmittal)**
Rejected because of inconsistencies or errors which shall be resolved or corrected by the Contractor prior to subsequent review by the City.

D. **Not Acceptable (Resubmit)**
Submitted material does not conform to drawings and specifications in major respects, i.e.: wrong size, model, capacity, or material.

It shall be the Contractor's responsibility to copy and/or conform reviewed submittals in sufficient numbers for its files, subcontractors, and vendors.

The Contractor shall submit a minimum of six (6) copies for each submittal. The Construction Manager will retain a minimum of four (4) copies for its use and record and return two (2) copies to the Contractor.

The City's favorable review of submittals shall be obtained prior to the fabrication, delivery and construction of items requiring submittal review.

Favorable review of submittals does not constitute a change order to the Contract requirements. The favorable review of all submittals by the City shall apply in general design only and shall in no way relieve the Contractor from responsibility for errors or omissions contained therein. Favorable review by the City shall not relieve the Contractor of its obligation to meet safety requirements and all other requirements of law. Favorable review by the City shall not constitute acceptance by the City of any responsibility for the accuracy, coordination, and completeness of any items or equipment represented on the submittals.

GC 4.5 QUALITY CONTROL - GENERAL

All materials and equipment to be incorporated into the Work, unless otherwise specified, shall be new and of the specified quality and equal to the samples found to be acceptable by the Design Consultant if samples have been submitted. All materials, equipment, and supplies provided shall, without additional charge to the City, fully conform with all applicable state and federal safety laws, rules, regulations, and orders, and it shall be the Contractor's responsibility to provide only such materials, equipment, and supplies. It shall be the duty of the Contractor to call the Construction Manager's attention to apparent errors or omissions and request instructions before proceeding with the Work. The Construction Manager may, by appropriate instructions, correct errors and supply omissions not involving extra cost, which instructions shall be as binding upon the Contractor as though contained in the original Contract Documents.

At the option of the Construction Manager, materials and equipment to be supplied under this Contract will be tested and inspected either at their place of origin, laboratory, or at the site of the Work. The Contractor shall give the Construction Manager written notification at least 30 days prior to the shipment of materials and major equipment to be tested and inspected at point of origin. Prior to shipping any precast concrete products, a meeting shall be held at the manufacturer's site to discuss and agree on uniform acceptability standards for the precast products. Satisfactory tests and inspections at the point of origin shall not be construed as a final

acceptance of the materials and equipment, nor shall such tests and inspections preclude retesting or re-inspection at the site of the Work.

Inspection of the Work by the City, Construction Manager and/or Design Consultant shall not relieve the Contractor of its obligations to conduct comprehensive inspections of the Work, to furnish materials and perform acceptable Work, and to provide adequate safety precautions in conformance with the intent of the Contract.

4.5.1 QUALITY ASSURANCE INSPECTION

All work and materials are subject to the inspection of the Construction Manager. The Contractor shall prosecute work only in the presence of the Construction Manager or a City inspector appointed by the Construction Manager, and any work done in the absence of said Construction Manager or inspector may be subject to rejection. Furthermore, failure to call for the Construction Manager or inspector to inspect as the work progresses shall be considered as a major breach of the Contract and may constitute grounds for the City to terminate. The Contractor shall make a request to the Construction Manager or inspector at least twenty-four (24) hours in advance before inspection services are required for the work. If the specifications, the Construction Manager's instructions, laws, ordinances, or any public authority require any work to be specially tested or approved, the Contractor shall give timely notice of its readiness for inspection. The City, Construction Manager, Design Consultant and authorized agents and their representatives shall at all times be provided safe access to the Work wherever it is in preparation or progress and to all warehouses and storage yards wherein materials and equipment are stored, and the Contractor shall provide facilities for such access and for inspection, including maintenance of temporary and permanent access. Inspection of the Work shall not relieve the Contractor of the obligation to fulfill all conditions of the Contract, and improper work will be subject to rejection. Work and materials not meeting such requirements shall be made good, and unsuitable work or materials may be rejected; notwithstanding that such work or materials have been previously inspected by the Construction Manager or that payment therefore has been included in a progress estimate.

No work or any portion thereof shall be deemed acceptable by reason of the presence of the Engineer. While the Engineer will endeavor to point out to the Contractor any defective work which comes to the Engineer's attention during these observations, the Engineer's failure to do so shall not constitute the basis of any claim, suit, or cause of action by the Contractor or any party against the Engineer or City and shall not excuse nonconforming or defective work by the Contractor.

No portion of any work or installed materials shall be covered or concealed in any manner without first being inspected by the Construction Manager. If any work should be covered up without the approval or consent of the Construction Manager, the Construction Manager shall have the authority to require, at any time before acceptance of the Work, that such work be uncovered for examination. After examination, the Contractor shall restore said portions of the Work to the standards required by the Specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing of the covering and the replacing of the covering or making good of the parts removed, will be paid for as provided in GC 6.0, CHANGE ORDERS, but should the work so exposed or examined prove unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed shall be at the Contractor's expense.

4.5.2 PERMIT AND CODE COMPLIANCE INSPECTIONS

Separate and independent from the inspections above, the Work may require the inspections of Building Officials or other agencies. The Contractor shall make arrangements with the Carson City Building Department to schedule appropriate Building Permit compliance inspections and with other agencies (i.e. Fire Officials, NDOT, NDEP, etc.) to schedule their required permit and code inspections. Such inspectors shall have the authority provided them by their agencies and jurisdictions.

4.5.3 SAMPLES AND TESTS

The source of supply of materials for the Work shall be subject to tests and inspection before the delivery is started and before such materials are used in the Work. Representative preliminary samples of the character and quality prescribed shall be submitted to the Construction Manager by the Contractor in sufficient quantities or amounts for testing or examination.

GENERAL CONDITIONS

All tests of materials furnished by the Contractor shall be made in accordance with the commonly recognized standards of national technical organizations, and such special methods and tests as are prescribed in the Technical Specifications. Certificates of Compliance shall be provided by the Contractor as required in the Technical Specifications.

A. Sampling

The Contractor shall furnish such samples of materials as are requested by the Construction Manager. No material shall be used until the Construction Manager has had the opportunity to test or examine such materials. Samples shall be secured and tested whenever necessary to determine the quality of the material. Samples and test specimens prepared at the site, such as concrete test cylinders, shall be taken or prepared by the Construction Manager in the presence and with the assistance of the Contractor.

B. Testing

All initial testing including, but not limited to, concrete, soils, and asphalt/concrete pavement shall be at no expense to the Contractor and shall be performed in the City's laboratory or in a laboratory designated by the City. When required by the Contract or the Construction Manager, the Contractor shall furnish certificates of tests of materials and equipment made at the point of manufacture by a recognized testing laboratory.

The Contractor is responsible for all system and equipment testing as provided for in these Contract Documents.

C. Retesting Costs

The costs of any retesting required due to failed test or defective material or sample shall be at the Contractor's expense. The City will deduct such retesting costs from the progress payments through a deductive change order.

D. Test Standards

All sampling, specimen preparation, and testing of materials shall be in accordance with the requirements of the Standard Specifications, or any permits, and the standards of nationally recognized technical organizations. The physical characteristics of all materials not particularly specified shall conform to the latest standards published by the American Society for Testing Materials, where applicable.

E. Testing Disputes

In the event that the Contractor disputes the results of the City's materials testing and retains his/her own testing laboratory for comparison testing, only a laboratory and personnel certified under the Nevada Alliance for Quality Transportation Construction (NAQTC) will be considered.

GENERAL CONDITIONS

SECTION 5.0 PAYMENT

GC 5.1 GENERAL

The Contractor shall accept the compensation, as herein provided, as full payment for furnishing all labor, materials, tools, equipment, and incidentals appurtenant to the various items of the Proposal Summary, as further specified herein, necessary for completing the Work, all in accordance with the requirements of the Contract Documents, including all costs of permits and compliance with the regulations of the Occupational Safety and Health Administration of the U. S. Department of Labor (OSHA), and no additional compensation will be allowed therefore. No separate payment will be made for any item that is not specifically set forth in the Proposal Summary, and all costs therefore shall be included in the prices named in the Proposal Summary for the various items of Work. Prior to the City processing the pay estimate, if prevailing wage rates are required, the Contractor shall submit to the City a copy of its certified payroll reports for each week within the pay estimate period.

GC 5.2 PAYMENT FOR PATENTS AND PATENT INFRINGEMENT

All fees or claims for any patented invention, article, or arrangement that may be used upon or in the work, or is in any manner connected with the performance of the Work, shall be included in the price bid for doing the work. The Contractor and its sureties shall defend, protect, and hold the City, the Construction Manager, and Design Consultant, and their officers, agents, employees, and volunteers harmless against liability of any nature or kind for any and all costs, legal expenses, and damages made for such fees or claims and against any and all suits and claims brought or made by the holder of any invention or patent, or on account of any patented or unpatented invention, process, article, or appliance manufactured for or used in the performance of the Contract, including its use by the City. Before final payment is made on the Contract, the Contractor shall furnish an affidavit to the City regarding patent rights for the Project. The affidavit shall state that all fees and payments due as a result of the Work incorporated into the Project or methods utilized during construction have been paid in full. The Contractor shall certify in the affidavit that no other fees or claims exist in this Project.

GC 5.3 PAYMENT OF TAXES

The Contractor shall pay and shall assume exclusive liability for all taxes levied or assessed on or in connection with the Contractor's performance of this Contract, including, but not limited to, state and local sales and use taxes, federal and state payroll taxes or assessments, and excise taxes. No separate allowance will be made therefore, and all costs in connection therewith shall be included in the total amount of the Contract Amount.

GC 5.4 PAYMENT FOR LABOR AND MATERIALS

In accordance with the provision of NRS 338.550, the Contractor shall pay and require its subcontractors to pay all accounts for labor including workers′ compensation premiums, state unemployment and federal social security payments and other wage and salary deductions required by law. The Contractor also shall pay and cause its subcontractors to pay all accounts for services, equipment, and materials used by the Contractor and its subcontractors during the performance of Work under this Contract. Such accounts shall be paid as they become due and payable.

GC 5.5 PARTIAL PAYMENTS

In consideration of the faithful performance of the Work prosecuted in accordance with the provisions of the Contract Documents, the City will pay the Contractor for all such work installed on the basis of percentage completion. Amounts earned will be based on the accepted Schedule of Values.

Payments will be made by the City to the Contractor on estimates approved by the Construction Manager, based on the value of equipment installed and tested, labor and materials incorporated into said permanent Work by the Contractor during the preceding month, and acceptable materials and equipment on hand (materials and equipment furnished and delivered to the site by the Contractor and not yet incorporated into the work accompanied by an approved paid invoice) per GC 5.5.1, below.

Partial payments will be made monthly based on work accomplished as of the last day of each calendar month.

The Contractor and Construction Manager shall meet within five (5) days after the end of each calendar month to review and agree on the Work completed within the past month. The Contractor shall then submit its progress billing of the Work completed during the prior month and the Work completed to date on the City′s approved form

corresponding to the accepted Schedule of Values. Upon receipt of Contractor's progress billing, the City shall act in accordance with the following:

a. The Construction Manager shall review the submitted progress billing to verify that it corresponds with the agreement reached at the above mentioned review meeting. If the progress billing is satisfactory, the Construction Manager will process it for payment.

b. If the Construction Manager determines that the progress billing is not satisfactory, then pursuant to NRS 338.525, the City shall, within twenty (20) days of receipt of said progress billing, give written notification to the Contractor of any amount that will be withheld and a detailed explanation of the reason for the withholding. The remainder will be processed for payment.

If requested, the Contractor shall provide such additional data as may be reasonably required to support the partial payment request. Payment will be made by the City to the Contractor in accordance with City's normal accounts payable procedures. The City shall retain amounts in accordance with Sections GC 5.6, RETENTION, and GC 5.7, OTHER WITHHOLDS.

Per NRS 338.515, the City shall pay the Contractor within thirty (30) days after receipt of its progress billing.

5.5.1 PARTIAL PAYMENTS - INCLUSION OF MATERIALS ON HAND

Except as otherwise provided in NRS 338.515(1), GC 5.6 “RETENTION”, NRS 338.525, and GC 5.7 “OTHER WITHHOLDS”, pursuant to NRS 338.515(2), the City will pay or cause to be paid to the Contractor the actual cost of the supplies, materials and equipment that have been identified in the Special Conditions as eligible for such payment. To be eligible for such payment the supplies, materials, or equipment must:

(A) be identified in the Special Conditions:

(B) have been delivered and stored at a location, and in the time and manner, specified in this Contract by the Contractor or a subcontractor or supplier for use in the Work; and,

(C) be in short supply or were made specifically for this Contract.

Materials, as used herein, shall be considered to be those items which are fabricated and manufactured goods and equipment. Only those materials for which the Contractor can transfer clear title to the City will be qualified for partial payment.

To receive payment for materials and equipment delivered to the site, but not incorporated in the Work, it shall be necessary for the Contractor to submit to the Construction Manager a list of such materials at least seven (7) days prior to submitting the monthly progress billing for work completed. At the Construction Manager's discretion, the Construction Manager will approve items for which partial payment is to be made subject to the following:

a. Only equipment or materials which have received favorable review of shop drawings will qualify.

b. Eligible equipment or materials must be delivered and properly stored, protected, and maintained at the job site in a manner favorably reviewed by the Construction Manager.

c. The Contractor's actual net cost for the materials must be supported by paid invoices of suppliers or other documentation requested by the Construction Manager.

GC 5.6 RETENTION

From each progress payment estimate, ten (10) percent of the “total completed to date” sum will be deducted and retained by the City, and the remainder, less the amount of all previous payment, will be paid to the Contractor. After fifty (50) percent of the Work has been completed and if progress on the Work remaining is satisfactory, the

deduction to be made from the remaining progress payments and from the final payment may be reduced to five (5) percent of the adjusted Contract Price at the discretion of the City.

GC 5.7 OTHER WITHHOLDS

In addition to the amount which the City may otherwise retain under the Contract, the City may withhold a sufficient amount of any payment otherwise due the Contractor, as in its judgment may be necessary to cover:

a. Defective work not remedied;

b. A reasonable doubt that the Contract can be completed for the balance then unpaid;

c. Damage to another contractor, third party, or to property;

d. Failure to submit, revise, resubmit, or otherwise conform to the requirements herein for preparing and maintaining a construction schedule;

e. Failure of the Contractor to keep the Work progressing in accordance with its Progress Schedule;

f. Failure to maintain current “As-Built″ record drawings;

g. Failure of the Contractor to make proper submissions, as herein specified;

h. Payments due the City from the Contractor;

i. Reduction of Contract Amount because of modifications; or

j. The Contractor's neglect or unsatisfactory prosecution of the Work, including failure to clean up.

When the above reasons for withhold amounts are removed, payment will be made to the Contractor for amounts withheld.

GENERAL CONDITIONS

SECTION 6.0 CHANGE ORDERS

GC 6.1 GENERAL

Without invalidating the Contract and without notice to sureties or insurers, the City through the Construction Manager, may at any time order additions, deletions, or revisions in the Work. These will be authorized by Work Directive, Field Order, or Change Order. A Change Order will not be issued for a Work Directive unless the Construction Manager concurs with an appeal by the Contractor that such Work Directive is a change in the scope of the Contract. The Contractor shall comply promptly with the requirements of all Change Orders, Field Orders, or Work Directives. The work involved in Change Orders shall be executed under the applicable conditions and requirements of the Contract Documents. If any Field Order or Work Directive causes an increase or decrease in the Contract Amount or an extension or shortening of the Contract Time, an equitable adjustment will be made by issuing a Change Order. If the Contractor accepts a Change Order that does not include a time extension, the Contractor waives any claim for additional time for the work covered by that Change Order. Additional or extra work performed by the Contractor without written authorization of a Work Directive, Field Order or Change Order will not entitle the Contractor to an increase in the Contract Amount or an extension of the Contract Time.

Extra work shall be that work neither shown on the Contract Drawings nor specified. Such work shall be governed by all applicable provisions of the Contract Documents. In giving instructions, the Construction Manager shall have authority to make minor changes in the Work, not involving extra cost, or extra time, and not inconsistent with the intent of the Work. With the exception of an emergency which would endanger life or property, no extra work or change shall be made unless in pursuance of a written order by the City through the Construction Manager, and no claim for an addition to the total amount or total time of the Contract shall be valid unless so ordered in writing.

In case any change increases or decreases the Work shown, the Contractor shall be paid for the work actually done at a mutually agreed upon adjustment to the Contract Amount.

If the Contractor refuses to accept a Change Order, the City may issue it unilaterally. The Contractor shall comply with the requirements of the Change Order. The City shall provide for an equitable adjustment to the Contract, and compensate the Contractor accordingly. If the Contractor does not agree that the adjustment is equitable, it may submit a claim in accordance with the requirements herein stated.

GC 6.2 DIFFERING SITE CONDITIONS

The Contractor shall promptly, and before such conditions are disturbed, notify the Construction Manager in writing, of any:

a. Material that the Contractor believes may be hazardous waste that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of law.

b. Subsurface or latent physical conditions at the site differing from those indicated.

c. Unknown physical conditions at the site of any unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract.

The Construction Manager shall promptly investigate the conditions, and if it finds that the conditions do materially differ, or do involve hazardous waste, and cause an increase or decrease in the Contractor's cost of, or the time required for performance of any part of the Work, the City shall cause to be issued a change order under the procedures provided herein.

In the event that a dispute arises between the City and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor's cost of, or time required for, performance of any part of the Work, the Contractor shall not be excused from any scheduled completion date provided for by the Contract, but shall proceed with all Work to be performed under the Contract. The Contractor

shall retain any and all rights provided either by Contract or by law which pertain to the resolution of disputes and protests between the parties.

No claim of the Contractor under this clause shall be allowed unless the Contractor has given the notice required.

GC 6.3 RESOLUTION OF DISPUTES

6.3.1 CONTRACT INTERPRETATION BY THE CONSTRUCTION MANAGER

Questions regarding the meaning and intent of the Contract Documents shall be referred in writing by the Contractor to the Construction Manager. Where practical, the Construction Manager shall respond to the Contractor in writing with a decision within seven (7) working days of receipt of the request.

6.3.2 CLAIMS

A. Notice

If the Contractor disagrees with the Construction Manager's decision, or in any case where the Contractor deems additional compensation or a time extension to the Contract period is due the Contractor for work or materials not covered in the Contract or which the Construction Manager has not recognized as extra work, the Contractor shall notify the Construction Manager, in writing, of its intention to make claim. Claims pertaining to decisions based on Contract interpretation or such other determinations by the Construction Manager shall be filed in writing to the Construction Manager within five (5) days of receipt of such decision. All other claims or notices for extra work shall be filed in writing to the Construction Manager prior to the commencement of such work. Written notice shall use the words "Notice of Potential Claim". Such Notice of Potential Claim shall state the circumstances and all reasons for the claim, but need not state the amount.

It is agreed that unless notice is properly given, the Contractor shall not recover costs incurred by it as a result of the alleged extra work, changed work or other situation which, had proper notice been given, would have given rise to a right for additional compensation. The Contractor should understand that timely Notice of Potential Claim is of great importance to the Construction Manager and City, and is not merely a formality. Such notice allows the City to consider preventative action, to monitor the Contractor's increased costs resulting from the situation, to marshal facts, and to plan its affairs. Such notice by the Contractor, and the fact that the Construction Manager has kept account of the cost as aforesaid, shall not in any way be construed as proving the validity of the claim.

B. Records of Disputed Work

In proceeding with a disputed portion of the Work, the Contractor shall keep accurate and complete records of its costs and shall make available to the Construction Manager a daily summary of the hours and classifications of equipment and labor utilized on the disputed work, as well as a summary of any materials or any specialized services which are used which shall be signed by the Construction Manager and Contractor daily. Such information shall be submitted to the Construction Manager on a weekly or daily basis as determined by the Construction Manager, receipt of which shall not be construed as an authorization for or acceptance of the disputed work.

C. Submission of Claim Costs

Within thirty (30) days after the last cost of work for which the Contractor contends it is due additional compensation is incurred, but if costs are incurred over a span of more than thirty (30) days, then within fifteen (15) days after the thirtieth day and every month thereafter, the Contractor shall submit to the Construction Manager, as best the Contractor is able, its costs incurred for the claimed matter. Claims shall be made in itemized detail. Should the Construction Manager be dissatisfied with format or detail of presentation, and upon request for more or different information, the Contractor will promptly comply to the satisfaction of the Construction Manager. If the additional costs are in any respect not known with certainty, they shall be estimated as best as can be done. In case the claim is found to be just, it shall be allowed and

paid for as provided in GC 6.4, MODIFICATION PROCEDURES and GC 5.5, PARTIAL PAYMENTS.

D. Claim Meetings

The Construction Manager may call special meetings to discuss outstanding claims. The Contractor shall cooperate and attend such meetings prepared to discuss its claims, making available the personnel necessary for resolution, and all documents which may reasonably be requested by the Construction Manager.

GC 6.4 MODIFICATION PROCEDURES

6.4.1 CHANGES IN CONTRACT PRICE

Whenever corrections, alterations, or modifications of the Work under this Contract are ordered by the Construction Manager, approved by the City, and increase the amount of work to be done, such added work shall be known as extra work. When such corrections, alterations, or modifications decrease the amount of work to be done, such subtracted work shall be known as work omitted.

The difference in cost of the work affected by such change will be added to or deducted from the amount of said Contract Amount, as the case may be, by a fair and reasonable valuation, which shall be determined in one or more of the following ways as directed by the Construction Manager:

a. By unit prices accepted by the City and stated in the Contract Documents or Schedule of Values;

b. By unit prices subsequently fixed by agreement between the parties;

c. By an acceptable lump sum proposal from the Contractor; or

d. By Force Account (as described in GC 6.4.3, Force Account Payment, when directed and administered by the City or Construction Manager.

When required by the Construction Manager, the Contractor shall submit, in the form prescribed by the Construction Manager, an itemized breakdown with supporting data of the quantities and prices used in computing the value of any change that may be ordered.

The Construction Manager will review the Contractor's proposal for the change and negotiate an equitable adjustment with the Contractor. When there is an agreement, the Construction Manager will prepare and process the Change Order and make a recommendation for action by the City. All Change Orders must be signed by the Contractor and approved by the City unless unilaterally issued per GC 6.1, above.

The prices agreed upon and any agreed upon adjustment in Contract Time shall be incorporated in the written order issued by the City, which shall be written so as to indicate an acceptance on the part of the Contractor as evidenced by its signature. By signature of the Change Order, the Contractor acknowledges that the adjustments to cost and time contained in the Change Order are in full satisfaction and accord, payment in full, and so waives any right to claim any further cost and time impacts at any time during and after completion of the Contract for the changes encompassed by the Change Order.

When any Extra Work is performed by a Subcontractor, the markups established in GC 6.4.2 and GC 6.4.3 shall be applied to the Subcontractor's costs as determined under GC 6.4.2 and GC 6.4.3. The Contractor's markup on subcontracted work shall be limited to five percent (5%) of the total of the Subcontractor's costs, which amount shall constitute the markup for all overhead and profit for the Contractor on work by the Subcontractor. On any item(s) of Extra Work, there shall only be one markup allowed to the Subcontractor even if there are multiple tiers of subcontractors, and only one markup allowed to the Contractor for subcontracted work.

6.4.2 NEGOTIATED CHANGE ORDERS

Under the methods described in GC 6.4.1.b and 6.4.1.c above, the Contractor shall submit substantiating documentation with an itemized breakdown of Contractor and subcontractor direct costs, including labor, material, equipment, rentals, and approved services pertaining to such ordered work in the form and detail acceptable to the Construction Manager. The direct costs shall include only the payroll cost for workers and foremen including wages, fringe benefits as established by negotiated labor agreements or state prevailing wages, workers' compensation and labor insurance, and labor taxes as established by law. No other fixed labor burdens will be considered. The cost of materials used and equipment delivered and installed in the Work shall be as substantiated by appropriate documents. The cost of construction machinery and equipment shall be based on fair rental or ownership values acceptable to the Construction Manager as described in GC 6.4.3, Force Account Payment, and the cost of incidentals directly related to such work. The direct costs shall not include any labor or office costs pertaining to the Contractor's managers or superintendents, its office and office facilities, or anyone not directly employed on such work, nor the cost of small tools, as all such indirect costs form a part of the Contractor's overhead expense.

Under the method described in GC 6.4.1.b and 6.4.1.c, the maximum percentage which will be allowed for the Contractor's combined overhead and profit will be:

Direct Labor	fifteen percent (15%)
Materials	fifteen percent (15%)
Equipment (owned or rented)	fifteen percent (15%)

The above fees represent the maximum limits which will be allowed, and they include the Contractor's indirect home office expenses and all costs for cost proposal preparation.

The amount of credit to be allowed by the Contractor to the City for any such change which results in a decrease in cost will be the amount of the actual net decrease plus a credit in accordance with the markups allowed above.

The Contractor shall not claim for anticipated profits on work that may be omitted unless the deleted amount of work is determined to constitute a cardinal change to the Project.

6.4.3 FORCE ACCOUNT PAYMENT

If either the amount of Work or payment for a Change Order cannot be determined or agreed upon beforehand, the City may direct by written Change Order, Work Directive, or Field Order that the Work be done on a force account basis. The term "force account" shall be understood to mean that payment for the Work will be done on a time and expense basis, that is, on an accounting of the Contractor's forces, materials, equipment, and other items of cost as required and actually used to do the work. In order to have a valid claim for Force Account payment, the Contractor must submit on a daily basis the City's Daily Extra Work Report signed by both the Contractor's representative and the City's Construction Manager or inspector. For the work performed, payment will be made for the documented actual cost of the following:

a. Direct labor cost for workers, including foremen, who are directly assigned to the force account Work. Direct labor cost is the actual payroll cost including wages, fringe benefits as established by negotiated labor agreements or state prevailing wages, workers' compensation and labor insurance, and labor taxes as established by law. No other fixed labor burdens will be considered.

b. Material delivered and used on the designated work, including sales tax, if paid for by the Contractor or its subcontractor. Material wasted or disposed of in a manor not called for under the contract, material not unloaded from the transporting vehicle, material placed outside the limits indicated or given plans; or material remaining on hand after completion of the work will not be paid for except as otherwise provided.

a. Equipment rental: For any machinery or equipment, the use of which has been authorized by the Construction Manager, the Contractor will be paid for the use of such machinery or equipment in the manner hereinafter specified, regardless of ownership and any rental or other agreement, if such may exist, for the use of such equipment entered into by the contractor.

Rental rates will be determined as follows:

1.1 The base rates shall be those established in publications and revisions thereto entitled "Rental Rate Blue Book for Construction Equipment" or the "Rental Rate Blue Book for Older Construction Equipment" available from Equipment Watch, 1735 Technology Drive, Suite 410, San Jose, CA 95110-1313, phone (408) 467-6700.

The hourly rate to be paid shall be the monthly rate divided by 176, multiplied by the regional adjustment factor, and multiplied by the appropriate rate adjustment factor, then plus the estimated operating cost per hour shown therein, and then rounded to the nearest $0.10.

2. Attachments (e.g. tractor with ripper and dozer or tractor with loader and backhoe) will be included in the hourly rental rate only when deemed essential to the work as determined by the Construction Manager. When multiple attachments are approved for use and are being used interchangeably, the attachment having the highest rental rate shall be the only on included for payment.

3. No direct payment will be made for necessary accessories (including replenishing blades, augers, teeth, hoses, bits, etc.) if not listed in the Rental Rate Blue Book.

4. No compensation will be allowed for shop tools having a daily rental rate of less than $10 as set forth in Section 18 of the Rental Rate Book.

If ordered to use equipment not listed in the aforementioned publications, a suitable rental rate for such equipment will be established. Contractor shall furnish any cost data which might assist in the establishment of such rental rate.

Except as provided below, payment will be made for the actual time that such equipment is in operation on the work. Time will be measured in 0.5 hours increments of actual working time and necessary traveling time of the equipment within the limits of the project.

Authorized standby time for idle equipment will be paid for at 50% of the "monthly rate divided by 176, multiplied by the regional adjustment factor, and multiplied by the rate adjustment factor", and rounded to the nearest $0.10. No operating cost, markup, overhead or profit will be added.

The rental rates paid as above provided shall include the cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciating, storage, insurance and all incidentals.

When special equipment has been ordered in connection with force account work, travel time and transportation to the project will be measured as hereinafter outlined. For the use of special equipment moved in on the work and used exclusively for extra work paid for on a force account basis, the rental rates as determined above and the cost of transporting the equipment to the location of the work and its return to its original location will be paid, all according to the following provisions:

(a) The original location of the equipment to be hauled to the location of the work will be agreed to in advance.

(b) The City will pay the costs of loading and unloading such equipment.

(c) The cost of transporting equipment on low bed trailers shall not exceed the hourly rates charged by established haulers.

(d) The rental period shall begin at the time the equipment is unloaded at the site of the extra work, shall include each day that the equipment is at the site of the extra work, excluding Saturdays, Sundays and legal holidays unless the extra work is performed on such days, and shall terminate at the end of the day on which the Construction Manager directs the Contractor to discontinue the use of such equipment.

(e) Should the Contractor desire the return of the equipment to a location other than its original location, the City will pay the cost of transportation by the above provisions, provided such payment shall not exceed the cost of moving the equipment to the work.

(f) Payment for transporting and loading and unloading equipment as above provided will not be made if the equipment is used on the work in any other way than upon extra work paid for on a force account basis.

To the preceding costs, there shall be added the following fees as the combined overhead and profit for the Contractor:

a. A fixed fee not-to-exceed fifteen (15) percent of the costs of Item a, labor, above.

b. A fixed fee not-to-exceed fifteen (15) percent of the costs of Item b, materials, above.

c. A fixed fee not-to-exceed fifteen (15) percent of the costs of Item c, equipment, above.

The added fixed fees shall be considered to be full compensation covering the cost of general supervision, overhead, profit, and all other expenses. The above fixed fees represent the maximum limits which will be allowed, and they include the Contractor's indirect home office expenses and all costs for cost proposal preparation and record keeping.

6.4.4 UNIT PRICE ADJUSTMENTS DUE TO INCREASED OR DECREASED QUANTITIES

The unit prices as stated in the Bid and as negotiated in Change Orders shall apply to one hundred (100) percent of the quantity indicated to be estimated quantity for the Bid item, plus or minus twenty-five (25) percent. Either party to the Contract will be entitled to an equitable adjustment in unit prices for that portion of the actual quantity less than seventy-five (75) percent or more than one hundred twenty-five (125) percent of the original Bid quantity. Such equitable adjustment shall be determined in one or more of the following ways:

A. If the parties are able to agree, the price will be determined by using:
   1. Unit prices; or
   2. Other agreed upon prices.

B. If the parties cannot agree, the price will be determined by the Engineer using:
   1. Unit prices, or
   2. Other means to establish costs.

The following limitations shall apply in determining the amount of the equitable adjustment:

A. No claim for loss of anticipated profits on deleted or uncompleted work or consequential damages of any kind will be allowed.

B. If the actual quantity of work performed is less than seventy-five (75) percent of the original Bid quantity, the total payment for the item will be limited to not more than seventy-five (75) percent of the amount originally Bid.

C. No payment will be made for extended or unabsorbed home office overhead and field overhead expenses to the extent that there is an unbalanced allocation of such expenses among the contract Bid items.

D. No adjustment in the unit contract bid price will be made for any item unless the increase or decrease in quantity results in a change of $10,000 or more as measured by the original bid quantity and unit price for the item.

The City will not adjust for increases or decreases if the City has entered the amount for the Bid item in the proposal form only to provide a common basis for bidders.

6.4.5 TIME EXTENSIONS FOR CHANGE ORDERS

If the Contractor requests a time extension for the extra work necessitated by a proposed Change Order, the request must be accompanied by a time impact analysis, based on the latest Construction Schedule update, or other method acceptable to the Construction Manager.

GC 6.5 DISPUTES

Any dispute relating to this Contract after award shall be resolved through good faith efforts by the Contractor and City. The Contractor shall have the right to appeal any decision by any inspector to the Construction Manager; and, by the Construction Manager to the Owner's Representative. Initial notice of any dispute must be filed with the Construction Manager per GC 6.3.2.A, Claims - Notice.

If the Contractor considers the determination of the Construction Manager to be unfair he/she shall, within ten (10) days after receipt of the Construction Managers decision, file a written protest with the Owner's Representative stating clearly and in detail his/her objections and the reasons therefore. The Owner's Representative shall review the issue in dispute and shall promptly advise the Contractor in writing of his/her final decision. At all times, the Contractor shall carry on the Work and maintain its Construction Schedule in accordance with the requirements of the Contract and the determination of the City, pending resolution of any dispute.

If review by the Owner's Representative does not result in a resolution of the dispute, the parties shall proceed to non-binding mediation. Non-binding mediation shall be conducted under the auspices of the American Arbitration Association acting under its Construction Industry Mediation Procedures. Mediation conducted in accordance with this provision shall take place in Carson City, Nevada. Mediation shall be conducted by a single mediator, approved by both the City and the Contractor from a list provided by the American Arbitration Association. Each party shall pay one-half of the mediator's compensation and the administration fees. Each party shall bear its own expenses associated with the mediation, including but not limited to its own attorney and expert consultant fees. Each party shall have at least one individual attend the mediation proceeding who has full authority to settle the dispute on their behalf, provided however, that any agreement reached will have to be put before the Carson City Board of Supervisors or Carson City Regional Transportation Commission for final approval.

GC 6.6 ARBITRATION

Any controversy or claim arising out of or relating to the performance of these Contract Documents, which cannot be resolved by mutual agreement or mediation, shall be submitted to binding arbitration by the claiming party by filing a Notice of Intent to Arbitrate (demand) within fifteen (15) days of the conclusion of mediation, specified above in GC 6.5, DISPUTES, with the other party and three (3) copies to the American Arbitration Association or the Nevada Arbitration Association. Either party to the Contract Documents may request that any dispute or difference be arbitrated by filing a demand to arbitrate. Said demand shall contain a statement of the disputes,

the amount involved, if any, and the remedy sought. Through written mutual consent, the parties may agree to combine all disputes for a single arbitration proceeding during or after substantial completion of the Project. Such arbitration shall be conducted in accordance with the Construction Industry Arbitration Rules (which can be found at www.adr.org) administered by the American Arbitration Association or the Nevada Arbitration Association. Failure to give such notice in the time specified shall preclude the party desiring arbitration from subsequently arbitrating that particular claim, dispute, or other matter. Judgment on the award rendered by the arbitrators may be entered in the First Judicial District Court of the State of Nevada.

In the event that any controversy or claim arising out of or relating to the performance of this Contract becomes the subject of arbitration, Carson City shall have the right to join or bring an additional party to the arbitration proceeding, and the Contractor hereby irrevocably consents and agrees to such joinder.

In the event that Carson City is named as a party to any arbitration action arising out of, or resulting from the design or construction of the Project, the Contractor hereby agrees, at the request of Carson City, to be joined as a party to that arbitration proceeding and to be bound by any decision resulting from arbitration.

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 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.

Any arbitration carried out under the provisions of GC 6.6, ARBITRATION, shall be heard and determined by a three (3) member panel. From a list of arbitrators provided by the American Arbitration Association, Carson City shall select one (1) member of the panel and the Contractor shall select one (1) member of the panel. The third member of the panel shall be selected from said list by the first two (2) members and shall be approved by both Carson City and the Contractor. The third (3^{rd}) member shall function as the Chairperson of the arbitration panel.

The Contractor shall carry on the Work and maintain progress during any arbitration or any other disputes unless otherwise mutually agreed upon in writing.

Arbitration conducted in accordance with this provision shall take place in Carson City, Nevada.

GENERAL CONDITIONS

SECTION 7.0 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

GC 7.1 GENERAL

The Contractor shall provide all temporary facilities and utilities required for prosecution of the Work, protection of employees and the public, protection of the Work from damage by fire, weather or vandalism, and such other facilities as may be specified or required by any legally applicable law, ordinance, rule, or regulation.

GC 7.2 TEMPORARY UTILITIES AND CONSTRUCTION FACILITIES

7.2.1 ELECTRICAL SERVICE

The Contractor shall arrange with the local utility to provide adequate temporary electrical service at a mutually agreeable location. The Contractor shall then provide adequate jobsite distribution facilities conforming to applicable codes and safety regulations. The Contractor shall provide, at its own cost, all electric power required for construction, testing, general and security lighting, and all other purposes whether supplied through temporary or permanent facilities.

7.2.2 WATER

The Contractor shall pay for and shall provide for all facilities necessary to furnish water for its use during construction. Water used for human consumption shall be kept free from contamination and shall conform to the requirements of the state and local authorities for potable water. The Contractor shall pay for all water used for the Contractor's operations prior to final acceptance. The Contractor shall be responsible for obtaining a City water meter and paying all associated charges, including monthly water usage.

The Contractor is hereby informed that Carson City does not allow use of potable water for dust control on unpaved areas and/or earthwork compaction except for health safety concerns as determined by NDEP. The Contractor must obtain a "Treated Wastewater Effluent for Construction Purposes Permit" from the Carson City Wastewater Treatment Plant located at 3320 E. Fifth Street, Carson City. Special arrangements must be made with the Carson City Water Utility located at 3505 Butti Way, Carson City, for use of potable water for dust control on paved areas.

7.2.3 TEMPORARY LIGHTING

The Contractor shall provide temporary lighting in all work areas sufficient to maintain a lighting level during working hours not less than the lighting level required by OSHA standards. As permanent lighting facilities are completed they may be used in lieu of temporary facilities, provided however, that bulbs, lamps, or tubes of such facilities used by the Contractor shall be replaced prior to final acceptance of the Work.

7.2.4 HEATING AND VENTILATION

The Contractor shall provide means for heating and ventilating all work areas as may be required to protect the Work from damage by freezing, high temperatures, weather, or to provide a safe environment for workers. Unvented direct fired heaters shall not be used in areas where freshly placed concrete will be exposed to the combustion gases until at least two hours after the concrete has attained its initial set.

7.2.5 SANITARY CONVENIENCES

The Contractor shall provide suitable and adequate sanitary conveniences for the use of all persons at the site of the Work. Such conveniences shall include chemical toilets or water closets and shall be located at an appropriate location at the site of the Work. All sanitary conveniences shall conform to the regulations of the public authority having jurisdiction over such matters. At the completion of the Work, all such sanitary conveniences shall be removed and the site left in a sanitary condition.

7.2.6 COMMUNICATIONS

The Contractor shall provide, at its own cost, telephone communications to the Project Site either through ground lines or cellular equipment.

7.2.7 CONSTRUCTION FACILITIES

Construction hoists, elevators, scaffolds, stages, shoring, and similar temporary facilities shall be of ample size and capacity to adequately support and move the loads to which they will be subjected. Railings, enclosures, safety devices, and controls required by law or for adequate protection of life and property shall be provided**.**

A. Staging and Falsework

Temporary supports shall be designed by a professional registered engineer with an adequate safety factor to assure adequate load bearing capability. If requested by the Construction Manager, the Contractor shall submit design calculations for staging and shoring prior to application of loads.

Excavation support shall be in accordance with GC 2.6.12 (D), Excavation Safety.

B. Temporary Enclosures

When sandblasting, spray painting, spraying of insulation, or other activities inconvenient or dangerous to property or the health of employees or the public are in progress, the area of activity shall be enclosed adequately to contain the dust, over-spray, or other hazard. In the event there are no permanent enclosures of the area, or such enclosures are incomplete or inadequate, the Contractor shall provide suitable temporary enclosures.

C. Warning Devices and Barricades

The Contractor shall adequately identify and guard all hazardous areas and conditions by visual warning devices and, where necessary, physical barriers. Such devices shall, as a minimum, conform to the requirements of OSHA and MUTCD**.**

D. Use of Explosives

All persons engaged in the activities of receiving, storing, using, handling or transporting any explosives must obtain a permit from the Carson City Fire Department; and all work shall be governed by Title 14, Fire, of the Carson City Municipal Code. The Contractor must notify the Construction Manager at least 14 days prior to the use of explosives.

GC 7.3 CONSTRUCTION CONTROLS

7.3.1 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS

The Contractor shall not trespass upon private property and shall be responsible for the protection of public and private property at and adjacent to the Work and shall exercise due caution to avoid damage to such property.

The Contractor shall not infringe upon wetland areas at the Site, whether identified or not, without the written approval of the Construction Manager. Infringement on wetlands will give cause for suspension of all work being conducted on or adjacent to the wetland area.

In addition to any requirements imposed by law, the Contractor shall shore up, brace, underpin, and protect as may be necessary, all foundations and other parts of all existing structures adjacent to and adjoining the Site of the Work which are in any way affected by the excavations or other operations connected with the performance of the Work. Whenever any notice is required to be given to any adjacent or adjoining landowner or other party before commencement of any work, such notice shall be given in writing by the Contractor.

The Contractor shall repair or replace all existing improvements which are not designated for removal (e.g., curbs, sidewalks, survey points, fences, walls, signs, utility installations, pavements, structures, irrigation lines and facilities, etc.) and are damaged or removed as a result of its operations. Repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimension.

Land survey monuments and property marks shall not be moved or otherwise disturbed by the Contractor until the Contractor arranges for a Nevada licensed Land Surveyor to witness or otherwise reference their locations in accordance with the requirements of the agency having jurisdiction. Any survey monument or property mark so moved or disturbed must be re-established and re-set by a Nevada licensed Land Surveyor in accordance with the requirements of the agency having jurisdiction.

Trees, lawns, and shrubbery that are not to be removed shall be protected from damage or injury. If damaged or removed because of the Contractor's operations, they shall be restored or replaced in as nearly the original conditions and location as is reasonably possible or better. Where existing turf areas are damaged, they must be replaced with fresh sod of matching grass.

The Contractor shall give reasonable notice, as determined by the Construction Manager, to occupants or owners of adjacent property to permit them to salvage or relocate plants, trees, fences, sprinklers, and other improvements within the right-of-way which are designated for removal or would be destroyed because of the Work.

A. Flood Protection

During the construction period, the Contractor shall be responsible for any damage which may result from flooding, including any earthwork re-excavation or replacement that may be a result of flooding. The Contractor shall submit to the Construction Manager a flood control plan for trenching operations associated with the Work. The flood control plan shall describe the Contractor's plan for control and diversion of surface runoff and flood flows around trench and structure excavations, and the Contractor's action plan for protection of the work and Contractor's plant and equipment during flood events.

7.3.2 PROJECT SECURITY

The Contractor shall make adequate provision for the protection of the Work area against fire, theft, and vandalism, and for the protection of the public against exposure to injury. Contractor shall call the Carson City Sheriff's Department at 887-2008 or call 911 in the event of any public harassment or violence to any of the Contractor's or subcontractor's employees.

A. Fire Extinguisher

Sufficient number of fire extinguishers of the type and capacity required to protect the Work and ancillary facilities, shall be provided and maintained in readily accessible locations.

B. Temporary Fences

The Contractor shall enclose the site of the Work other than roadways with a fence or barricades adequate to protect the Work and temporary facilities against acts of theft, violence, or vandalism. Work within the roadway right-of-way shall be protected as provided for in the "Manual on Uniform Traffic Control Devices."

In the event all or a part of the site is to be permanently fenced, this permanent fence or a portion thereof may be built to serve for protection of the Work site, provided however, that any portions damaged or defaced shall be replaced prior to final acceptance.

Temporary openings in existing fences shall be protected to prevent intrusion by unauthorized persons. During night hours, weekends, holidays, and other times when no work is performed at the site, the Contractor shall provide temporary closures or guard service to protect such openings. Temporary openings shall be fenced when no longer necessary.

C. Graffiti Removal

The Contractor shall at all times keep all equipment, traffic control devices, materials, office trailers, storage facilities, the Work and the site free from graffiti. The Contractor shall remove all graffiti within 24 hours of notification by the Construction Manager. All expenses associated with graffiti removal shall be the responsibility of the Contractor.

7.3.3 ACCESS ROADS

Access roads shall be maintained to all storage areas and other areas to which frequent access is required. Similar roads shall be maintained to all existing facilities on the site of the Work to provide access for delivery of material and for maintenance and operation. Where such temporary roads cross buried utilities that might be injured by the loads likely to be imposed, such utilities shall be adequately protected by steel plates or wood planking, or bridges shall be provided so that no loads shall discharge on such buried utilities.

7.3.4 NOISE ABATEMENT

Operations at the site shall be performed to minimize unnecessary noise. Special measures shall be taken to suppress noise during night hours. Noise levels due to construction activity shall not exceed the following levels:

Allowable Daytime Noise Levels as measured at the exterior of any given site shall be a noise level of not more than 75 dba Leq from the hours of 7:00 AM to 8:00 PM daily.
Allowable Nighttime Noise Levels as measured at the exterior of any site shall be a noise level of not more than 55 dba Leq from the hours of 8:00 PM to 7:00 AM daily.

Internal combustion engines used on the Work shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated without said muffler.

7.3.5 WORKING HOURS

Construction shall be allowed only between the hours of seven (7:00) AM and four (4:00) PM Monday thru Friday (Normal Working Hours) unless otherwise specified in the Special Conditions.

The starting, fueling, maintenance of equipment, and delivery of equipment and materials, and placement or removal of traffic control devices is considered Construction and shall not be allowed outside of the Normal Working Hours. Requests for exceptions to these limitations shall be made in writing to the Construction Manager for consideration in non-sensitive, non-residential areas.

The Contractor may request to work outside the Normal Working Hours by submitting a written request to the Construction Manager at least seventy-two (72) hours in advance of the start of work outside the Normal Working Hours. Permission may or may not be granted by the Construction Manager, with hours noted by the Construction Manager. The Contractor shall be responsible for the costs of any inspection, testing, and additional administration incurred by the City, or its agents and representatives, for work by the Contractor outside the Normal Working Hours defined above, on weekdays in excess of eight (8) hours, or any work on weekends or holidays recognized by the City. Such costs shall be withheld from the succeeding monthly progress payment. Any work specifically required to be performed outside the Normal Working Hours as may be indicated in the Special Conditions, or work required by the Construction Manager, in writing, to be performed outside the Normal Working Hours, is excluded from withholding of payment.

7.3.6 DRAINAGE CONTROL / STORM WATER POLLUTION PREVENTION PLAN

In all construction operations, care shall be taken not to disturb existing drainage patterns whenever possible. Particular care shall be taken not to direct drainage water onto private property. Drainage water shall not be diverted to streets or drainage ways inadequate for the increased flow. Drainage means shall be provided to protect the Work and adjacent facilities from damage due to water from the site or due to altered drainage patterns from construction operations. Temporary provisions shall be made by the Contractor to insure the proper functioning of gutters, storm drain inlets, drainage ditches, culverts, irrigation ditches, and natural water courses. The Contractor shall provide water quality and erosion controls in accordance with the NDEP "Handbook of Best Management Practices" to prevent sedimentation runoff from the Site.

The Contractor shall comply with the National Pollutant Discharge Elimination System (NPDES) regulations for storm water discharges from a construction site and the Stormwater General Permit NVR100000, State of Nevada, Division of Environmental Protection, General Permit. Preparation of a Storm Water Pollution Prevention Plan (SWPPP) and compliance with the permitting requirements shall be the Contractor's responsibility. The Contractor shall submit the required Notice of Intent (NOI) to the NDEP and comply with the SWPPP referenced above. The Contractor shall obtain any required Temporary Permits prior to any discharges. The Contractor shall submit any required Notification of Termination to the NDEP upon completion of construction and final site stabilization, and shall submit to the City copies of all records associated with the permitting requirements. Contractor must submit a copy of the SWPPP permit and plan to the Construction Manager prior to the start of work.

The Contractor shall be responsible for all costs associated with complying with the permit requirements, submitting any required NOI, preparing and complying with the SWPPP, revising the SWPPP, any required submittal of the Notification of Termination, any required discharge permit and any other related costs.

7.3.7 CONSTRUCTION CLEANING

The Contractor shall, at all times, keep property on which work is in progress and the adjacent property free from accumulations of waste material, rubbish, caused by his/her operations. All surplus material shall be removed from the site immediately after completion of the work causing the surplus materials. Spillage resulting from hauling operations along or across existing streets or roads shall be removed immediately by the Contractor. All gutters and roadside ditches shall be kept clean and free from obstructions. Daily cleanup of trash, paper, and small debris subject to movement with winds shall be required**. The Contractor shall reasonably clean the immediate Work Area on a daily basis to reduce risk of personal injury as well as fire hazard.**

7.3.8 DISPOSAL OF MATERIAL

Unless otherwise specified in the Special Conditions, the Contractor shall make his/her own arrangements for disposing of construction waste materials outside the Project Site and the Contractor shall pay any and all dump fees required, except as provided below. If the Contractor arranges to dispose of construction waste materials on private property, he/she shall first obtain written permission from the property owner on whose property the disposal is to be made in which the City is absolved from any and all liability and responsibility in connection with the disposal of such material on said property. A copy of said written permission must be delivered to the Construction Manager prior to starting disposal operations. When construction waste material is disposed of as above provided, the Contractor shall conform to all required codes and permits pertaining to grading, hauling, and filling of earth or other materials. The Contractor shall contact the City's Community Development Department and the Health Department concerning such codes and permits.

Disposal of all construction waste including but not limited to all pipe, concrete, manholes, pavement, building and excavated materials, and all other appurtenances shall be disposed of in a manner consistent with all local, State and Federal laws and guidelines. Any hazardous waste shall be disposed of at hazardous waste disposal sites that are permitted to accept such wastes. All disposal site locations shall be approved in writing by the Construction Manager. A copy of the disposal plans and any required permits must be delivered to the Construction Manager prior to starting disposal operations.

Asbestos Cement Pipe (ACP) removed from the Project shall be separated from other material, manifested and delivered to the Carson City Landfill. For manifest and disposal requirements prior to removal of any ACP the Contractor shall contact:

Mr. David Bruketta
Operations Manager- Environmental
Cellular phone at (775) 230-2782

ACP Manifests are valid for ten (10) days from date of issuance.

Construction waste including but not limited to all pipe, concrete, manholes, pavement, building and excavated material, and all other appurtenances removed from the Project may be accepted free of charge at the Carson City Landfill if approved under the direction of the Construction Manager. A Landfill Disposal Form will be provided by the Carson City Inspector upon request by the Contractor. The Contractor or Contractor's agent will provide a Landfill Disposal Form, which must be signed, dated and timed by a Carson City Inspector, to the Landfill Attendant for a waiver of disposal fees for each separate load. The Contractor will pay the full disposal fee if no Landfill Disposal Form from Carson City is presented to the Landfill Attendant. Carson City will not reimburse the Contractor for disposal fees due to failure to comply with these conditions.

7.3.9 PARKING AND STORAGE AREAS

All stockpiled materials and parked equipment at the job site shall be located to avoid interference with private property and to prevent hazards to the public. Locations of stockpiles, parking areas, and equipment storage must be approved by the Construction Manager. Material and equipment may not be stored in public right-of-way unless prior approval by the Construction Manager.

GC 7.4 PUBLIC SAFETY/CONVENIENCE AND TRAFFIC CONTROL

The Contractor shall so conduct his/her operations as to offer the least possible obstruction and inconvenience to the general public, including the residents, businesses and any other contractors working in the vicinity of the Work, and he/she shall have under construction no greater length or amount of work than he/she can prosecute properly with due regard to the rights of the public. Convenient access to driveways, houses, and buildings along the line of work shall be maintained and temporary crossings shall be provided and maintained in good condition. Traffic shall not be prevented from accessing business. Maintain a minimum of one (1) access to each business property at all times. Business Access signs shall be used to direct business traffic. Not more than one (1) crossing or intersecting street or road shall be closed at any one time. Safe access must be maintained for pedestrian traffic through or around the work area at all times.

Inconvenience caused by digging across driveways and sidewalks shall be kept to a minimum by restoring the serviceability of the driveway or sidewalk as soon as possible. Contractor shall provide and identify to the Construction Manager a person to act as a community liaison person, who must be fluent in English with good communication skills, to personally contact each resident and business at least three (3) working days prior to performing any Work which effects their sewer or water service, restricts on street parking, restricts access to their property, or blocks a driveway or sidewalk. Said community liaison person shall provide written notices, pre-approved by the Construction Manager, to all such residents and businesses and must be available and able to answer their questions. Copies of notices to all properties other than single family residences provided to the Construction Manager shall include a name and signature of the person accepting the notice for those properties. The Contractor shall make every effort to provide alternate access to the property during such closure, if at all possible. The Contractor shall replace or repair any damage done to driveways or sidewalks and shall provide temporary relief in the form of steel plates and supports of adequate strength over the excavation. Access to properties must be restored during all non-working hours.

Direct access shall be provided at all times to fire stations, fire hydrants, hospitals, police stations and at all other agencies or services where emergencies may require immediate access to same.

Temporary paving replacement in front of business establishments shall be placed immediately following backfill and shall remain in place until the condition of the backfill is suitable for permanent pavement replacement.

No streets or roads shall be blocked or made inaccessible, due to the Contractor's work, without approval of the City. No open excavations shall be allowed during non-working hours. Excavations shall be backfilled to grade and, if in a pavement area, temporarily paved level with adjacent pavement or, with the prior approval of the Construction Manager, covered with steel plates during non-working hours. If temporary paving and/or maintenance of temporary paving of all disturbed streets, driveways and sidewalks is not completed prior to the end of each work day, the Construction Manager may suspend the Work on the entire project, without any additional costs to the City, until the temporary paving is completed and/or properly maintained. The Construction Manager shall be the judge of proper maintenance of the temporary paving.

If needed, the City will provide the Contractor with "Temporary No Parking" signs to be posted in the construction area by the Contractor to accommodate each day's work. The Contractor must post the "Temporary No Parking" signs in the construction area no less than seventy-two (72) hours prior to the effective start of such parking restrictions. Temporary No Parking hours are to conform to the Contractor's Working hours, but in no instance shall they exceed the Working Hours as specified in GC 7.3.5 or as amended in the Special Conditions. Contractor must keep a log of day, date, time and location that the signs are posted. If, when work starts, vehicles are parked in violation of the posted restrictions, the Contractor shall call the Carson City Sheriff's Office Dispatch Center at 887-2008 to request that the violating vehicle(s) be towed. Contractor shall identify expected no parking areas on the Traffic Control Plan and shall notify the Construction Manager at least one (1) week prior to the need for the "Temporary No Parking" signs.

7.4.1 HAUL ROUTES

Prior to hauling, the Contractor shall submit for approval the proposed route(s) for all construction traffic on the Project. This shall include any designated routes, if any, shown on the Contract Drawings. Upon approval, the Contractor shall adhere to approved routes only.

7.4.2 TRAFFIC CONTROL

During construction within traffic roadways the Contractor shall maintain no less than one (1) lane of traffic during working hours and two (2) lanes at all other times. When one-way traffic is in effect, the Contractor shall employ no less than two (2) flaggers to facilitate the safe flow of traffic. No streets or roads shall be blocked, closed or made inaccessible due to the Contractor's work, without the prior approval of the Construction Manager.

The Contractor shall provide and maintain traffic control devices such as signs, warning lights, reflectors, barriers, fences, flaggers, steel plates, barricades, light signs and other necessary safety devices and measures on all sides of the construction zone, the number, size, message and spacing of which shall be governed by the Traffic Control Plans, local ordinance, or permit requirements. Traffic control shall be in accordance with the MUTCD. Any Traffic Control for work within NDOT right-of-way shall be in accordance with the NDOT permit requirements. The Contractor shall submit for approval by the City and any other applicable agency, its traffic control plans at least two (2) weeks prior to beginning work on public streets in accordance with GC 4.0, SHOP DRAWINGS AND QUALITY CONTROL.

The Contractor shall designate a Traffic Control Supervisor who shall be responsible for preparing and signing all Traffic Control Plans, and for installing and maintaining all traffic control devices as shown on the approved Traffic Control Plans. Said Traffic Control Plans must be per the provisions of the MUTCD and any Special Conditions. The Traffic Control Supervisor shall be available to be contacted by the Construction Manager twenty-four (24) hours per day for the duration of the Contract. The Traffic Control supervisor must be certified as a worksite traffic supervisor by ATSSA. As a minimum, the Traffic Control Supervisor shall check all traffic control devices at the start, mid-day, and end of each work day and at least once on every non-working day.

In addition to the flaggers required above, the Contractor shall employ flaggers at places designated by the Construction Manager for the safe movement of the public through the Work area. Flaggers shall possess a valid flagger card attesting that they have satisfactorily completed an instructional course in flagger procedures conducted by NDOT or some other approved course given by another entity of government within the State of Nevada.

No material or equipment shall be stored or parked where it will interfere with the free and safe passage of public traffic, and at the end of each day's work, and at other times when construction operations are suspended for any reason, the Contractor shall remove all materials, equipment and other obstructions from the public right-of-way. With the prior approval of the Construction Manager, the Contractor may shield the public traffic from materials or equipment within the public right-of-way by the use of temporary concrete or water filled barrier rails.

The Contractor shall notify the Carson City Fire Department and Sheriff Department dispatch center at (775) 887-2008 at least twenty-four (24) hours in advance of rerouting public traffic when traffic patterns

are to be altered due to construction operations. Said notification shall set forth the specific traffic patterns to be provided in lieu of the normal routing and the estimated duration of such change(s).

Should the Contractor appear to be negligent in furnishing or maintaining warning and protective measures, as above provided, the Construction Manager may direct attention to the existence of the hazard, and the necessary warning and protective measures shall be immediately furnished and installed by the Contractor at its expense. Failure to do so will be cause to suspend the Work until the deficiency is corrected. If the Contractor does not correct a Traffic Control deficiency by the end of the work day and the Construction Manager determines that the public safety is endangered, then the Construction Manager may take the necessary action to correct the deficiency pursuant to GC 2.5.4, City's Right to Carry Out the Work.

7.4.3 TRAFFIC DETOURS

Detouring traffic to private streets shall not be allowed. Advance warning/detour signs shall be used to direct through-traffic, and shall be placed to notify traffic to avoid all possible situations that require individual motorists to turn around to avoid the closure. The advanced warning signs shall be placed in accordance with the approved Traffic Control Plan. No detour or street closure signing shall be placed on any street prior to the start of Work hours and shall be removed prior to the end of Work hours unless otherwise provided in the approved Traffic Control Plan.

7.4.4 PEDESTRIAN AND BICYCLE DETOURS

Advanced warning/detour signs shall be placed to notify pedestrian and bicycle traffic of any closure and to avoid all possible situations that may require individuals to turn around to avoid the closure.

GC 7.5 PROJECT SIGNS

If required by Contract Special Conditions, the Contractor shall provide, install and maintain for the duration of the Project, Project sign(s). Two (2) signs shall be required for pipeline projects. The sign(s) shall be installed within fifteen (15) days of the Notice to Proceed and shall be installed where directed by the Construction Manager. The Project Sign(s) shall conform to the requirements listed in the Special Conditions.

GC 7.6 PROJECT OFFICE

Unless the Contractor has an office in the Carson City/Reno/Sparks area, the Contractor shall maintain a suitable office on the Project site. The Contractor shall maintain at the Project site copies of the Contract Documents, record drawings, Project schedule, submittals, permits, Material Safety Data Sheets, approved Traffic Control Plans, and other relevant documents which shall be accessible to the Construction Manager and other City representatives during normal working hours. Said site office shall be the headquarters of the Contractor's representative authorized to receive Drawings, instructions, or other communications or articles from the City or its agents unless the Contractor notifies the City otherwise per GC 2.6.1, Office.

GC 7.7 STORAGE OF MATERIALS

Materials shall be stored in such a manner as to ensure the preservation of their quality and fitness for the Work. When required by the Construction Manager, materials shall be placed on platforms or other hard, clean surfaces and covered.

Materials shall be stored so as to facilitate inspection. Storage areas shall be suitably fenced if necessary to protect the public or the material.

Locations and arrangements for storage sites for materials and equipment outside the limits of work, shall be selected and maintained by the Contractor at the Contractor's expense. Prior to occupying a storage site on private property, the Contractor shall submit a letter or agreement signed by the private property owner that authorizes the Contractor to occupy the private property. The City shall be specifically exempted in any agreement from any liability incurred from the use of private property for construction purposes. Use of portions of the City's area at the site for materials and equipment storage shall be permitted upon the approval of the Construction Manager.

GC 7.8 HAZARDOUS MATERIALS

The storage and handling of potential pollution-causing and hazardous materials, including but not necessarily limited to: gasoline, oil, and paint shall be in accordance with all local, state, and federal requirements. All hazardous materials shall be stored and handled in accordance with the Material Safety Data Sheets for the products. Material Safety Data Sheets shall be submitted to the Construction Manager prior to the delivery of materials to the Project site. Copies of the Material Safety Data Sheets shall be maintained at the Project Site in a readily accessible location.

GC 7.9 SYSTEM TESTING

The Contractor shall test the facilities as specified in the Technical Specifications. The Contractor shall provide all other necessary facilities for conducting the tests including but not limited to: personnel, power, water, equipment, and chemicals. The Contractor shall provide a minimum of forty-eight (48) hours notice to the Construction Manager of its readiness and intent prior to each test.

GC 7.10 COORDINATION/COOPERATION WITH UTILITIES

Within the construction limits of this Project may be various utility systems including water, reclaimed water, sanitary sewers, storm drains, gas, telephone, cable television, and electric power. The approximate location of known main line utilities, as taken from existing records, is shown on the Drawings. The service connections to these facilities may not be shown on the Drawings, however, the Contractor shall field locate and protect all service connections from damage during the course of the Work. The full costs for locating and protecting such service connections shall be included in the various items of work and no additional compensation shall be allowed. Where underground main utility distribution lines are shown on the plans or marked in the field, the Contractor shall assume that every property parcel is served by service connections for each type of utility. The City and Engineer do not guarantee that all existing utilities and facilities are shown on the Drawings or that they are shown in their actual position. The Contractor shall consider it normal and expected that the elevation and alignment of said utilities may vary from that shown on the Drawings, and also that utilities may be encountered that are not shown on the Drawings. Also consider it normal and expected that utilities will prove to be an impediment to the operations and that use of other than the usual equipment and construction methods in accomplishing the necessary work over, around or under such utility installations may be necessary. Should a discrepancy be found on the Drawings, it shall not be construed to relieve the Contractor from his/her responsibility to protect any such utility or facility.

The City has notified all utility companies, all pipeline owners, or other parties known to be affected by the Project and has endeavored to have all necessary adjustments of their facilities and other appurtenances made as soon as possible to eliminate conflicts within or adjacent to the limits of construction. The Contractor shall be responsible to protect and/or support all utilities which do not have to be relocated, but which do affect the Work. Where the City has made arrangements with utility owners to relocate or adjust their facilities, the City's responsibility for such adjustments are shown on and called out at the specific locations on the plans.

Any delays to the Contractor's operations performing the current critical item(s) of work on the latest favorably reviewed Construction Schedules as a direct result of utility or other facilities not being rearranged as herein provided (other than delays in connection with rearrangements made to facilitate Contractor's construction operations) will be considered excusable delays within the meaning of GC 3.12.2, Excusable Delays.

It shall be the Contractor's full responsibility to call Underground Service Alert (USA) at (1-800-227-2600) not less than two (2) working days, but not more than fourteen (14) calendar days, prior to performing any excavation, for location mark-out of any underground utilities and obtaining an inquiry identification number. Contractor must comply with all instructions received from USA.

Note: Per NRS 455.082, the approximate location of a subsurface installation marked in response to a notice to USA means a strip of land not more than twenty-four (24) inches on either side of the exterior surface of a subsurface installation.

If a private underground utility such as gas, electric, telephone or cable television facility must be located or adjusted for construction operations and its location differs by more than twenty-four (24) inches on either side of the exterior surface of the subsurface facility from that shown on the plans or marked in the field, the City shall

reimburse the Contractor, as extra work, for the difference between the costs incurred in finding the actual location of the facility and the costs of finding the reputed location of the facility.

Contractor shall pothole all indicated, shown, or marked utilities and points of connection to verify their exact location. The Contractor shall have the proposed Work laid out in the filed by a Nevada Licensed Professional Land Surveyor or the Surveyor's subordinates prior to commencing with the potholing. The Contractor shall then pothole prior to performing any other Work including saw cutting for the work. The Contractor shall obtain date (on a form provided by the Construction Manager) to include type, size, and dimensions, material, location and elevation of the underground utilities, referenced to the Surveyor's lay out stakes for each pothole. The Contractor shall provide to the Construction Manager, all data, and shall identify to the Construction Manager any facilities which conflict with the Work on the day the pothole is performed. Carson City will not be responsible for any damages, delays or standby time caused by the Contractor's failure to perform potholing prior to commencement of the Work, failure to provide the data or identify the conflicts when specified, or failure to locate services, laterals or points of connections.

Carson City will be responsible for repairs, damages and standby time caused the Contractor due to non-marking, mis-marking or mis-locating, as defined in NRS 455.082, of the City's main line water mains, reclaimed water mains, sanitary sewer main lines and storm drains. Compensation to the Contractor for such repairs, damages or standby time shall be calculated on the basis of GC 6.4.3, Force Account Payment. NOTE: This provision does not apply to service laterals/connections unless the Contractor can show he/she used diligence in trying to locate each service.

The Contractor shall not interrupt the service function or disturb the support of any utility without authority from the utility owner. All valves, switches, manholes, vaults, and meters shall be maintained readily accessible for emergency shutoff or access. In case it should be necessary to move or temporarily maintain the property of any utility, the cost of which is not required to be borne by the owner thereof, the Contractor shall bear all time required and all expenses incidental to the removal or temporary maintenance of such property in a manner satisfactory to the owner thereof. The work necessary to the raising, lowering, or relocating of a utility may be done by the owner of the utility or by the Contractor, at the option of the utility owner. All work shall be in accordance with the utility owner's standards, and shall be at the Contractor's time and expense unless otherwise expressly provided for in the Special Conditions.

The Contractor shall repair or replace all utilities damaged or destroyed due to his/her operations, even in the event such damage or destruction occurs after backfilling or is not discovered until after completion of backfilling. The Contractor shall resolve all crossing and clearance problems with the utility company concerned and the Construction Manager. The right is reserved to the State, County, City, and owners of private utilities and franchises to enter at any time upon any street, alley, right-of-way, or easement for the purpose of making changes in their property made necessary by the Work and for the purpose of maintaining and making repairs to their property.

In cases where water or sewer mains, or service connections thereto, are accidentally broken or, with the prior approval of the Construction Manager, are intentionally cut by the Contractor, they shall be fully repaired to City specifications and returned to service within four (4) hours, or sooner if deemed necessary by the Construction Manager. The Contractor is to make these repairs a priority over other portions of the Work.

At all times allow the Fire Department access to fire hydrants. Do not place materials or other obstructions closer to a fire hydrant than permitted by ordinance, rules, or regulations or within fifteen (15) feet of the fire hydrant in the absence of such ordinances, rules, or regulations.

GC 7.11 CONTAMINATED GROUNDWATER and/or SOIL

Contaminated groundwater and/or soil may exist anywhere within the Project limits. If contaminated groundwater and/or soil are encountered during construction, the Contractor must act in accordance with all applicable Federal, State, and local laws and Nevada Administrative Code 445A.347, which requires the Nevada Department of Environmental Protection be notified within twenty-four (24) hours of the encounter at (775) 687-4670.

GC 7.12 DUST CONTROL

The Contractor is responsible for the control of dust originating from any and all of the Contractor's construction operations either within or outside of the Work Area at all times in accordance with Federal, State and local laws, at the Contractor's expense. In areas where fugitive dust is a nuisance, the Contractor shall, as often as necessary, wet down the area to prevent dusty conditions. This includes weekends and holidays. The Contractor shall contact NDEP to determine if a Ground Disturbance Permit is required.

GC 7.13 BY-PASS PUMPING OF SANITARY SEWER

The Contractor shall prepare and submit to the Construction Manager a plan for by-pass pumping of sanitary sewers which will provide for adequate size pumps and hoses to carry the flows from one manhole to another. Hoses must be rated for traffic if traffic is allowed on the roadway where the hose is placed. Provide a backup pump, replacement hose sections and a backup power source at the work site prior to commencing any by-pass pumping operations. Contractor must test the by-pass pumping system, including the backup pump, in the presence of the Construction Manager or his/her representative prior to effecting the flow in the existing sanitary sewer to be diverted. Contractor must identify and have available during pumping operations a person capable and qualified to make emergency repairs in case of a failure of any part of the by-pass pumping operation. The Contractor shall ensure that no spillage of raw sewage will occur on or in the ground. The by-pass pumping plan shall also address how an accidental spill of raw sewage would be contained and mitigated.

GENERAL CONDITIONS

SECTION 8.0 CONTRACT COMPLETION, O&M MANUALS

GC 8.1 INTERMEDIATE COMPLETION

When an intermediate milestone is specified in the Contract Documents, and the Contractor considers that a Work element, section, or division has met the intermediate completion stage requirements, the Contractor shall notify the Construction Manager in writing. Upon receipt of the notification, the Construction Manager and the City will make inspection to determine if the Work element, section or division is sufficiently complete in accordance with the Contract Documents to determine its acceptability for Intermediate Completion and for determination of any other items which do not meet the terms of the Contract so the City can occupy or utilize the Work for its intended use. Upon verification that the Work element, section, or division meets the contractual requirements for Intermediate Completion, the Construction Manager shall prepare a Notice of Intermediate Completion letter for the City's signature. The notice shall establish the date of Intermediate Completion, the responsibilities of the City and Contractor for maintenance, utilities, and damage to the subject Work. If items are found which prevent such use or occupancy, the Construction Manager shall notify the Contractor of such items.

Upon the completion of such corrective work, the Contractor shall so notify the Construction Manager in writing. The Contractor agrees to pay the City's actual costs including, but not limited to, charges for engineering, inspection and administration incurred due to the Contractor's failure to complete the punch list work within the time period specified.

Unless otherwise specified under Special Conditions, no partial acceptance of any portion of the Work will be made and no acceptance other than the final acceptance of the overall completed Project will be made. No review pertaining to specific parts of the Project shall be construed as final acceptance of any part until the overall final acceptance by the City is made. Final payment for completed portions of Work will not be made until final acceptance of the total Work.

GC 8.2 SUBSTANTIAL COMPLETION

When the Contractor considers that all Work required by this Contract including equipment start-up and testing is substantially complete, the Contractor shall notify the Construction Manager in writing. Upon receipt of the notification, the Construction Manager and the City will make inspection to determine if the Work is sufficiently complete in accordance with the Contract Documents to determine its acceptability for Substantial Completion and for determination of any other items which do not meet the terms of the Contract so the City can occupy or utilize the Work for its intended use. If items are found which prevent such use or occupancy, the Construction Manager shall notify the Contractor of such items. Upon verification that the Project is substantially complete, the Construction Manager shall prepare a Notice of Substantial Completion letter for the City's signature. The notice shall establish the date of Substantial Completion and the responsibilities of the City and Contractor for maintenance, utilities, and damage to the Work.

GC 8.3 CONSTRUCTION COMPLETION, FINAL INSPECTION, PAYMENT, AND ACCEPTANCE

When the Contractor considers that all Work including record drawings, operation and maintenance manuals, and cleanup has been completed in accordance with the terms of the Contract, the Contractor shall notify the Construction Manager. Upon notification, the Construction Manager and the City will make the pre-final inspection to determine the actual status of the Work in accordance with the terms of the Contract. If materials, equipment, or workmanship are found which do not meet the terms of the Contract, the Construction Manager shall prepare a final punch list of such items and submit it to the Contractor. Following completion by the Contractor of the corrective work, required by the punch list, the Construction Manager shall notify the City that the Work has been completed in accordance with the Contract. A final inspection will be made to determine the acceptability of the Work. After completion of the Work, but prior to its acceptance by the City, the last partial payment will be made to the Contractor.

After receipt of the last partial payment, but prior to acceptance of the Work by the Carson City Board of Supervisors or Carson City Regional Transportation Commission, the Contractor shall send a letter to the Construction Manager submitting lien releases for all material, or labor for any work covered by this Contract. The letter shall state that acceptance of the final payment described below shall operate as and shall be, a release to the City, the Construction Manager, the Design Consultant, and their duly authorized agents, from all claims and/or liability to the Contract arising by virtue of the Contract related to those amounts. Disputed Contract claims

in stated amounts previously filed as provided in GC 6.3.2, Claims, may be specifically excluded by the Contractor from the operation of the release.
Following receipt of all required submittals, the Construction Manager's written statement that construction is complete, and recommendation from the City's representative to accept the Project, the Construction Manager shall prepare an agenda item for the Carson City Board of Supervisor's or Carson City Regional Transportation Commission's acceptance of the completed Work and a Notice of Completion.

Following the acceptance by the Carson City Board of Supervisors or the Carson City Regional Transportation Commission of the completed Work embraced in the Contract, the City will cause to be recorded in the office of the County Recorder a Notice of Completion.

Thirty (30) days after recording the Notice of Completion of the Work involved in the Contract, the City will pay the Contractor such sums of money as may be due the Contractor including all sums retained but excluding such sums as have previously been paid the Contractor. This payment will constitute the final payment to the Contractor under this Contract.

GC 8.4 OPERATION AND MAINTENANCE MANUALS

Prior to the delivery and installation of any item of machinery or equipment, the Contractor shall submit one (1) copy of the Operation and Maintenance Manual(s) as required by the Technical Specifications. The manual(s) will be reviewed by the Construction Manager and/or Design Consultant for content and the Construction Manager will advise the Contractor within five (5) working days of receipt if the manual is acceptable for the delivery and installation of the equipment or machinery. No equipment or machinery shall be tested or installed if the general content of the manual is found to be deficient. The final Operation and Maintenance Manuals, three (3) copies, must be submitted and favorably reviewed prior to final acceptance.

GC 8.5 EQUIPMENT START-UP

After all acceptance tests have been completed by the Contractor, but prior to final acceptance, the Contractor shall recheck all equipment for proper alignment and adjustment, check oil levels, relubricate all bearing and wearing points, and assure that all equipment is in proper condition for regular continuous operation. Final start-up of equipment requires forty-eight (48) hours advance notice to the Construction Manager and coordination with the user department of the City. Start-ups shall only occur Monday through Thursday.

GC 8.6 FINAL CLEAN UP

At the completion of the Work and before final inspection, the Contractor shall clean the Work Area, material sites, adjacent property and streets and all grounds occupied by the Contractor in connection with the Work of all rubbish, excess and waste materials, as well as all his/her tools, construction equipment, machinery and temporary facilities. All parts of the Work shall be left in a neat and clean condition. If the Contractor fails to clean up at the completion of the Work, the City may do so and the cost shall be charged to the Contractor.

GC 8.7 WARRANTY OF TITLE

No material, supplies, or equipment for the Work under this Contract shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by the seller or supplier. The Contractor warrants clear title to all material, supplies, and equipment installed or incorporated in the Work and agrees upon completion of all work to deliver the premises, together with all improvements and appurtenances constructed or placed thereon by the Contractor, to the City free from any claim, liens, security interest, or charges, and further agrees that neither the Contractor nor any person, firm, or corporation furnishing any materials or labor for any work covered by this Contract shall have any claims, liens, security interests or charges against this Project, provided that this shall not preclude the Contractor from installing metering devices or other equipment of utility companies, the title of which is commonly retained by the utility company. Nothing contained in this Section, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection or any right under any law permitting such persons to look to funds due the Contractor in the hands of the City. The provisions of this Section shall be inserted in all subcontracts and material contracts, and notices of its provisions shall be given to all persons furnishing materials for the work when no formal contract is entered into for such materials.

GC 8.8 RECORD DRAWINGS

The Contractor shall keep at the Site a copy of the Contract drawings and specifications, including addenda and change orders, to which the Design Consultant, Construction Manager, and City shall have access at all times.

The Contractor shall maintain one (1) set of specifications and full size drawing prints and mark thereon in red any and all deviations from plan dimensions, elevations, or orientations, and all changes from addenda, change orders, and clarifications. Marked prints shall be updated at least weekly and shall be available to the City for review. Prior to Final
Acceptance by the City, the Contractor shall submit the record Drawings to the Construction Manager in the manner and format specified in the Special Conditions.

GC 8.9 WARRANTY

The Contractor hereby agrees to make, at its own expense, all repairs or removals and replacements necessitated by defects in materials or workmanship supplied under the terms of this Contract, and to pay for any damage to other works resulting from repairs or removals and replacements of such defects which become evident within one (1) year after the date of Substantial Completion of the Project by Carson City or within such longer period of time as may be prescribed by law or by the terms of any applicable technical specification. The Contractor further assumes responsibility for a similar guarantee for all work and materials provided by subcontractors or manufacturers of packaged equipment components. The Contractor also agrees to indemnify, defend, and hold the City, and it's officers, agents, employees, and volunteers harmless from liability of any kind arising from damage due to said defects.

The Contractor shall execute and submit a completed Warranty Form in the format as appended to this section for the Work. The Warranty Form shall be submitted prior to the final acceptance of the Project or within five (5) days of the occupancy or use of a portion of the Work, whichever is applicable.

The Contractor shall, upon the receipt of written notice from the City, promptly make all repairs or removals and replacements arising out of defective materials, workmanship, or equipment. The City is hereby authorized to make such repairs or removals and replacements, and the Contractor and its Surety shall be liable for the cost thereof, if five (5) days after receipt of such written notice to the Contractor, the Contractor has failed to make or undertake the repairs or removals and replacements with due diligence. In case of emergency, where in the opinion of the City delay could cause serious loss or damage, repairs or removals and replacements may be made without notice being sent to the Contractor, and the expense in connection therewith shall be charged to the Contractor, and its Surety shall be liable for the cost thereof. Such action by the City shall not relieve the Contractor of the guarantees required by this Section or elsewhere in the Contract Documents.

This Section does not in any way limit the warranty on any items for which a longer warranty is specified or on any items for which a manufacturer or supplier gives a warranty for a longer period. The Contractor agrees to act as a co-guarantor with such manufacturer or supplier and shall furnish the City all appropriate guarantee or warranty certificates upon completion of the Work. No warranty period, whether provided for in this Section or elsewhere, shall in any way limit the liability of the Contractor or his/her sureties or insurers under the indemnity or insurance provisions of these General Conditions.

Prior to the expiration of the Warranty period, the City reserves the right to hold a meeting with the Contractor. The purpose of the meeting would be to review warranties, bonds, and maintenance requirements and determine required repair or replacement requirements of defective items.

For the purpose of this paragraph, acceptance of the Work or a portion of the Work by the City, shall not extinguish any covenant or agreement on the part of the Contractor to be performed or fulfilled under this Contract which has not, in fact, been performed or fulfilled at the time of such acceptance. All covenants and agreements shall continue to be binding on the Contractor until they have been fulfilled.

GENERAL CONDITIONS

WARRANTY FORM

Warranty For

_____(Project/Component)

_____(Location)

We hereby guarantee the _____(Project/Component)_____ that we have constructed for a period of one (1) year from ____(Date)____ the date of Substantial Completion of the Work set by Carson City.

The following items are excluded from the provisions of this warranty:

We agree that if any of the material or equipment should fail due to any reason other than improper maintenance or improper operation, if any pipe or appurtenances should develop leakage, or if any settlement of fill or backfill occurs, or should any portion of the Work fail to fulfill any of the requirements of the Contract Documents, we will, within five (5) days of receipt of written notice of such defects, commence to repair or replace the same together with any other work which may be damaged or displaced in so doing.

In the event of our failure to comply with the above mentioned conditions within a reasonable time after being notified, or should the urgency of the case require repairs or replacements to be made before we can be notified or respond to notification, we do hereby authorize Carson City, to proceed to have the defect repaired and made good at our expense, and we will pay the cost therefor upon demand.

The warranty provided herein shall not be in lieu of, but shall be in addition to any warranties or other obligations otherwise imposed by the Contract Documents and by law.

Contractor:

Signed:

Title:

Date:

GENERAL CONDITIONS

SECTION 9.0 PREVAILING WAGE

GC 9.1 PREVAILING WAGE RATES

A. The Contractor and subcontractors shall be bound by and comply with all federal, state and local laws with regard to minimum wages, overtime work, hiring and discrimination, including Chapter 338 of the NRS, which is entitled, "Public Works Projects." The Contractor shall ensure that all employees on the work site are paid in accordance with the CURRENT PREVAILING WAGE RATES AS APPROVED BY THE STATE LABOR COMMISSIONER, whenever the actual value of the Contract totals One Hundred Thousand Dollars ($100,000) or more, or when required by the Special Conditions. A copy of the rates are attached hereto and included herein. If a Change Order causes a Contract to exceed One Hundred Thousand Dollars ($100,000), the State Labor Commissioner may audit the entire Contract period.

When federal money is associated with the project making the Contract subject to both state and federal wage rates, the Contractor shall not pay less than the higher rate when the two rates differ for similar kinds of labor.

Questions involving the Prevailing Wage Rates for Carson City should be referred to the Labor Commissioner, State of Nevada, at (775)687-4850.

B. Posting of Minimum Wage Rates - In accordance with NRS, Chapter 338, Section 338.020, the Contractor shall post the hourly and daily rate of wages to be paid to each of the classes of mechanics and workers on the site of Work of this Contract in a place generally visible to the workers.

C. Pursuant to NRS 338.060 and 338.070, the Contractor hereby agrees to forfeit, as a penalty to the City, not less than Twenty Dollars ($20) nor more than Fifty Dollars ($50) for each calendar day or portion thereof that each worker employed on the Contract is paid less than the designated rate for any work done under the Contract, by the Contractor or any subcontractor under him/her, or is not reported to the City as required by NRS 338.070.

D. The Contractor and each subcontractor shall keep or cause to be kept an accurate record showing the name, the occupation and the actual per diem, wages and benefits paid to each worker employed by him/her in connection with the public Work. The General Contractor shall collect the wage reports from the Sub-Contractors and ensure the receipt of a certified copy of each weekly payroll for submission to the City as one complete package.

E. The record must be open at all reasonable hours to the inspection of the City, and its officers and agents. A copy of the record for each calendar week for the General Contractor and all Sub-Contractors must be sent to the City by the General Contractor no later than one (1) week after the end of the week. The copy must be open to public inspection as provided in NRS 239.010.

F. The Contractor and all subcontractors hereby agree not to hinder on-site interviews of the Contractor's or subcontractor's workers by the Construction Manager or his/her representative to verify that the workers are being paid the prevailing wage rates.

G. It is unlawful for any Contractor in connection with the performance of work under a contract with the state, or any of its political subdivisions, when payment of the Contract Price, or any part of such payment, is to be made from public funds, to refuse to employ or to discharge from employment any person because of his/her race, color, creed, national origin, sex, sexual preference or age, or to discriminate against a person with respect to hire, tenure, advancement, compensation or other terms, conditions or privileges of employment because of his/her race, creed, color, national origin, sex, sexual preference or age. The Contractor agrees to insert this provision in all subcontracts hereunder except subcontracts for standard commercial supplies or raw materials.

GC 9.2 NO EXTRA COMPENSATION

All work necessary to be performed after regular working hours, on Sundays or Legal Holidays, shall be performed without additional expense to the City. In case of extra work under the provisions of GC 6.4, MODIFICATION PROCEDURES, no additional payment will be made to the Contractor because of the payment by him/her of overtime wage rates for such work unless the use of overtime work in connection with such extra work is specifically ordered in writing by the City.

END OF GENERAL CONDITIONS

SPECIAL CONDITIONS

These Special Conditions amend or supplement the Standard Terms and Conditions and General Conditions of the Contract and add other Special Conditions to the contract document as indicated below, and amend or supplement the Technical Specifications. All provisions of the Contract which are not so amended or supplemented remain in full force and effect.

SC.1 SCOPE OF WORK

Carson City is accepting sealed bids for all labor, materials, tools and equipment necessary for the Carson City Animal Services Facility project. The Carson City Animal Services Facility Project consists of an 10,183 square feet building on a 1.5 acre site, including street frontage improvements. The project includes all common phases of construction customarily associated with this type of project.

General: Name of project is Carson City Animal Shelter, aka Carson City Animal Services Facility for Carson City, NV, as described on Contract Documents Drawings and Specifications are dated 07-23-2015 by the Architect, BDA Architecture P.C. The site is located at 549 Airport Road, Carson City, NV 89701.

SC.2 AMENDMENTS TO CONTRACT AWARD

CA. 9 Notice to Proceed

Replace entire paragraph with the following:

Within ten (10) calendar days of receipt of all required post-bid documents and information, including bonds, insurances, executed Contract, schedule of values and approved project construction schedule, the City will issue the Notice to Proceed.

CA. 10 Time: Completion of Project

A. Time

Change “calendar days” *to* “working days”

B. Liquidated Damages

Change “calendar days” *to* “working days”

SC.3 AMENDMENTS TO INSTRUCTIONS TO BIDDERS

B.1P Subcontracting

Remove the following in its entirety:

The bidder agrees that he/she will perform work totaling at least Fifty percent (50%) of the Bid amount and will not subcontract work totaling more than Fifty percent (50%) of the Bid amount.

SC.4 AMENDMENTS TO GENERAL CONDITIONS

The following provisions amend or supplement the General Conditions of the Contract. All provisions of the Contract which are not so amended or supplemented shall remain in full force and effect.

SECTION 1.0 INTENT, DEFINITIONS, and ABBREVIATIONS

GC 1.3 Governing Order of Bidding and Contract Documents

SPECIAL CONDITIONS

Add the following to the end of the ninth order of precedence (standard specifications):

Revision No. 6 dated 2-29-2012.

GC 1.5 Definitions

Revise Contract Time as follows:

Replace "calendar days" with "working days".

Revise Standard Specifications to add the following revision date:

Revision No. 6 dates 2-29-2012.

SECTION 3.0 PROGRESS OF WORK, MEETINGS, SCHEDULES

GC 3.5 Time of Completion

Add the following:

The successful Bidder, upon becoming the Contractor after having entered into a Contract with the City, shall commence the Work to be performed under the Contract on the date set by the City in the written Notice to Proceed, continuing the Work in accordance with the approved schedule and shall complete the entire Work by and within 228 **working days or no later than September 1, 2016**.

GC 2.6.11.A Certified Payrolls – If Prevailing Wage Rates are Required

Add the following:

Prevailing wage rates are required for this project. The CONTRACTOR shall prepare and submit Certified Payroll Reports weekly and provide all information as requested by the Owner. The Contractor may utilize Form WH-347 or a similar form that at a minimum contains the same information.

GC 3.11 Construction Schedules

A Type "B" Construction Schedule is required for this project.

GC 3.12.4 Weather Delays

*Add the following***:**

In order to be granted a time extension for a weather delay, the contractor must show critical path activities on the project schedule.

GC 3.13, Liquidated Damages

Revise the first paragraph as follows:

Replace every instance of the word "calendar" with "working".

Add the following:

SPECIAL CONDITIONS

In case of failure on the part of the Contractor to complete the Work within the limits in subsection 3.5, time of Completion, above, or within such additional time(s) as may be granted by formal action of the City, or the Contractor fails to prosecute the Work or any separable part thereof, with such diligence as will ensure its completion within the time(s) specified in the Contract or any extensions thereof, the Contractor shall pay to the City, as liquidated damages, the sum of $500 for each working day of delay until such reasonable time as may be required for final completion of the Work, together with any increased costs incurred by the City in completing the Work.

Time stated for completion shall not include the final cleanup and demobilization or work items not critical to the safe function of the project except as otherwise provided in the Special Conditions.

The signing of the proposal by the Bidder shall be prima facie evidence that the Contractor agrees that the amount of liquidated damages is fair and reasonable.

SECTION 4.0 SHOP DRAWINGS AND QUALITY CONTROL/INSPECTIONS

Add the following Section:

GC 4.1.1 Required Submittals for the Site

The following items, (**including but not limited to**) are required submittals:

General
Construction Schedule
Schedule of Values
Permits
State Labor Reporting Requirements
Material Certificates of Compliance
Safety Program
Certified Payroll Reports, Weekly
Traffic Control Drawings
Haul Routes
NOI for Storm Water Pollution Prevention Plan
Record Drawings
Disposal Plan, Permits and Permissions
Warranties

Materials for Site & Street Work
Aggregate Base Material
Recycled Asphalt Concrete Base
Unclassified Backfill
Asphalt Concrete Mix Design
Concrete Mix Design
Storm drain Pipe
SD manholes
Trench Drain
Manhole/catch basin
Electrical conduit/boxes
Site and Street Lighting
All fencing and gates
Permanent Signs, Poles and Anchors
Detectable Warning Cast Iron Pads (Plates)
Pavement Marking Paint
Rock Bags if needed
Tack Coat

Irrigation

pvc pipe/fitting
Backflow preventer
controller
Valves
Mulch
Fabric
Pre-emergent
Fertilizer
Boxes and risers
Flexible border
Soil amendments
soil
Humus mulch
Polytubing ¾"
Drip emitters
Inline Drip Tubing, 1/4 "
Splice Wire Connectors
Solvent cement
Control Wire

Water/Sewer

Fittings
Fire Hydrant
Valves
Bedding & Backfill
Pipe Restraints
Water and sewer pipe
Pit Setters
Tapping Saddles
Tapping Sleeves Valves
Valve Boxes and Lids
Fire Dept. Connection
Backflow device assembly

Add the following related to submittal for the Building

SECTION 4.1.1A – SUBMITTALS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

1.02 SUMMARY

1.03 SUBMITTAL PROCEDURES

A. All submittals and associated documents, with the exception of required samples, will be submitted electronically in Adobe PDF format.
B. All submittals to be issued with a submittal transmittal. Number each submittal with specification section number and a sequential number within each section. Number resubmittals with original number and an alphabetic suffix.
   1. Example: First submittal - 04200-001 etc. Revised submittal 04200-001A etc.
C. Identify Project, Contractor, Construction Manager, Subcontractor or supplier, pertinent drawing sheet and detail numbers, and specification section number, as appropriate.
D. Submit all submittals listed under "Submittals for Review" simultaneously for each product or specification section.

E. Where multiple products function as an assembly, group submittals for all related products into single submittal.
F. Apply Contractor's and/or Construction Manager's stamp, signature or initials certifying that:
   1. Submittal was reviewed.
   2. Products, field dimensions, and adjacent construction have been verified.
   3. Information has been coordinated with requirements of Work and Contract Documents.
G. Schedule submittals to expedite the Project, and deliver to Architect. Coordinate submittal of related items.
H. For each submittal, allow 14 days for Architect's review.
I. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of completed Work.
J. Revise and resubmit submittals when required; identify all changes made since previous submittal.
K. Distribute copies of reviewed submittals to concerned parties and to Project Record Documents file. Instruct parties to promptly report any inability to comply with provisions.
L. Incomplete or non-conforming submittals will not be reviewed.

1.04 PROPOSED PRODUCTS LIST

A. Within 15 days after date of Notice to Proceed, submit a complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.05 SUBMITTAL SCHEDULE

A. Within 15 days after date of Notice to Proceed, submit a submittal schedule showing all submittals proposed for project, including submittals listed as:
   1. Submittals for Review.
   2. Closeout Submittals.
B. Include for each submittal:
   1. Specification section number.
   2. Description of submittal.
   3. Type of submittal.
   4. Anticipated submittal date.

1.06 SHOP DRAWINGS

A. Identify details by reference to sheet and detail numbers, marks or room number shown on Drawings. Reproductions of details contained in Contract Documents are not acceptable.
B. Shop drawings shall be prepared specifically for this project. Shop drawings shall include dimensions and details, including adjacent construction and related work. Note special coordination required. Note any deviations from requirements of the Contract Documents.

1.07 PRODUCT DATA

A. Identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project.

1.08 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of Products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
B. Where so indicated, submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect's selection. Samples to be large enough to show full color and texture range of final installation.
C. Include identification on each sample, with full Project information
D. Unless otherwise specified in individual specifications, submit two of each sample.

1.09 MISCELLANEOUS

A. Submit inspection and test reports.
B. Submit warranties. Provide warranties as specified; warranties shall not limit length of time for remedy of damages Owner may have by legal statute. Warranties shall be signed by contractor, supplier or installer responsible for performance of warranty.
C. Submit survey data.
D. Submit closeout submittals.
E. Submit project photographs.

SPECIAL CONDITIONS

Submittal Requirements Checklist

Section	Submittal	Product Data	See Specifications	Materials List	Color Charts	Samples	Warranty	Installation Info	Shop Dwgs./Details	Schedules	Maintenance Data	Remarks*
02282	Termite Control	●					●	●			●	
02520	Portland Cement Concrete Paving	●	●									
02800	Site Improvements	●	●									
03300	Concrete	●	●									
04200	Unit Masonry		●									
05120	Structural Steel		●									
05310	Metal Decking		●									
05400	Cold-Formed Metal Framing		●									
05500	Metal Fabrications		●									
05511	Metal Stairs		●									
06175	Shop-Fabricated Wood Trusses	●							●			
06402	Int. Arch. Woodwork	●	●		●				●			
07050	Weather Barrier	●										
07210	Bulding Insulation	●										
07411	Metal Roof Panels	●	●		●		●		●			
07412	Manufactured Wall Panel	●	●		●		●		●			
07530	Single Ply Roofing	●	●				●				●	
07550	Modified Bituminous Membrane Roofing	●	●				●				●	
07600	Flashing & Sheet Metal		●									
07720	Roof Accessories		●									
07901	Joint Sealants	●	●		●		●				●	
08111	Steel Doors and Frames	●			●				●	●		4
08211	Wood & Plastic Doors	●			●				●	●		
08410	Aluminum Storefront	●	●		●				●	●		
08520	Aluminum Interior Window	●										
08560	Vinyl Windows	●	●		●				●	●		
08710	Door Hardware	●								●		

08800	Glazing	●	●									
09110	Non-Structural Metal Framing	●										
09161	Portland Cement Stucco	●	●		●	●						
09250	Gyp Board Assemb.	●	●									
09262	Gypsum Sheathing	●	●									
09300	Tile	●	●			●						9
09512	Acoustical Ceilings	●										
09650	Resilient Flooring	●				●	●	●			●	
09660	Rubber Sheet Flooring & Vinyl	●				●	●	●			●	
09670	Fluid and Trowel-Applied Flooring	●				●	●	●			●	
09678	Resilient Wall Base and Access.	●				●						
09900	Painting	●										
09950	Wall Coverings	●	●			●					●	
10000	Builders Specialties	●										
10655	Operable Partitions	●	●									
11920	Central Vacuum System	●										
12500	Window Treatments	●	●									
14210	Elevators		●									
15000	Mechanical		●									5
16000	Electrical		●									6, 7, 8

* See remarks index

Remarks:

1. For prefinished door frames, provide a selection of at least eight (8) colors for Architect/Owner selection
2. a. Provide "cut sheets" of exposed to view features and equipment including diffuses, fans, grills, etc.
   b. Provide product data, capacities, installation information, on each furnace, condenser, fan unit, etc.
   c. provide controls Submittal.
3. Provide submittal on each piece of service entrance equipment, panelboard, switches, raceway, wiremold.
4. Provide "cut sheets" of each light fixture type and data.
5. Provide submittal info on each system including alarm, communication and monitoring systems.
6. Provide submittal information on tile, grout, adhesive, trim and miscellaneous materials.

SECTION 4.1.1B - PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

1.10 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

1.11 SUMMARY

A. Provide products from one manufacturer for each type or kind as applicable. Provide secondary materials as recommended by manufacturers of primary materials.

B. Provide products selected or approved equal. Products submitted for substitution shall be submitted with acceptable documentation, and include costs of substitution including related work.
C. Architect may require information on previous installations where the proposed substitution may be seen.
D. Do not substitute products unless a substitution request has been approved by Architect.
E. Substitutions during Bidding: Refer to Instructions to Bidders
F. Architect will consider substitution requests within 30 days after award of Contract. After initial 30 day period, substitutions requests will be considered only due to non-availability of a specified product. In case of non-availability of a specified Product notify Architect in writing as soon as non-availability becomes apparent.
G. Substitutions shall be submitted prior to award of contract, unless otherwise acceptable. Approval of shop drawings, product data, or samples is not a substitution approval unless clearly presented as a substitution at the time of submittal.

1.12 SUBSTITUTION REQUESTS PROCEDURES

A. Request for substitution must be in writing. Conditions for substitution include:
   1. An 'or equal' / ‘or equivalent’ phrase in the specifications.
   2. Specified material cannot be coordinated with other work.
   3. Specified material is not acceptable to authorities having jurisdiction.
   4. Substantial advantage is offered to the Owner in terms of cost, time, or other valuable consideration.
B. Document specified product and proposed substitution with complete data, including:
   1. Product identification, including name and address of manufacturer.
   2. Product description, performance and test data, and reference standards.
   3. Sample, if requested.
   4. Description of any anticipated effect that acceptance of proposed substitution will have on progress schedule, construction methods, or other items of Work.
   5. Description of any differences between specified product and proposed substitution.
   6. Difference in cost between specified product and proposed substitution.
C. Document specified product and proposed substitution with complete data, including:
   1. Burden of proof for substantiating compliance of proposed substitution with Contract Document requirements remains with Contractor.
D. A request constitutes a representation that the Contractor has:
   1. Investigated the 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 that may be required for the work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension that may subsequently become apparent.
   5. Will reimburse Owner for design services associated with re-approval by authorities or revisions to Contract Documents to accommodate the substitution.

SPECIAL CONDITIONS

SECTION 4.1.1C - PRODUCTS AND SUBSTITUTIONS FORM

DATE:
PROJECT:
ATTENTION:

Coordinate information with requirements in Section 01600 – Products and Substitutions

Section No. **Paragraph** **Specified Product**

Proposed Substitution:

Reason for Substitution:

Product Data:
Attach complete technical data for both the specified product and the proposed substitution. Include information on changes to Contract Documents that the proposed substitution will require for its proper installation.

Samples: Attached: Will be furnished upon request:

Does the substitution affect the dimensions shown on the drawings?

Effects of proposed substitution on other work:

Differences between proposed substitution and specified product:

Manufacturer's warranties of the proposed substitution are:

Maintenance service and spare parts are available for proposed substitution from:

Cost savings to be realized by Owner, if proposed substitution is approved:

Change to Contract Time, if proposed substitution is approved: No Change Add Deduct
Deduct days

Submittal constitutes a representation that Contractor has read and agrees to the provisions of SECTION 4.1.1B Products and Substitutions.

SPECIAL CONDITIONS

SECTION 5.0 PAYMENT

GC 5.5 Partial Payments

Add the following paragraph following the 1st paragraph:

A Schedule of Values shall be submitted to the Construction Manager for approval, for all bid items for which the Contractor intends to submit a payment request when the Work included in that bid item is less than 100% complete. The Schedule of Values shall detail the costs for all the items included in the Description of Bid Items and Basis for Payment for the respective bid item. Also, included in the Contractor's payment request, the Contractor shall include his BMP maintenance log. A missing, incomplete or not up-to-date log will cause the payment request to be returned to the Contractor. In addition, incomplete or incorrect weekly payroll reports will cause pay requests to be returned.

GC 5.5.1 Partial Payments – Inclusion of Materials on Hand

Add the following:

The following materials/equipment are eligible for partial payments:

Items that are paid for in full, protected from damage, stored on site and to be installed in 30 days or more. The Construction Manager will review all requests and make a determination on each item.

SECTION 7.0 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

GC 7.3.5 Working Hours

The Normal Working Hours for the project will be from (7:00) AM to (5:30) PM, Monday thru Thursday.

GC 7.3.8 Disposal of Material

Add the following to the end of the 1st paragraph:

When disposing of construction waste material outside the City limits, the Contractor shall contact the appropriate local government departments concerning such codes and permits.

GC 8.3 CONSTRUCTION COMPLETION, FINAL INSPECTION, PAYMENT, AND ACCEPTANCE

Add the following:

A. Prerequisites to Project Acceptance: The following items must be completed before requesting the Architect/Engineer/Owners Representative's inspection for certification of substantial completion of the work (List known exceptions in the request):
   1. In progress payment following the date of claimed substantial completion, show either 100% completion for the portion of Work claimed or list incomplete items, the value of incomplete work, and reasons for the Work being incomplete.
   2. Submit statement showing an accounting of any changes to the Contract Sum.
   3. Advise the Owner of pending insurance change-over requirement.
   4. Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.
   5. Obtain and submit release enabling Owner's full unrestricted use of the Work and access to services and utilities including occupancy permits, operating certificates and similar releases.
   6. Submit record drawings, maintenance manuals, damage or settlement survey, property survey, and similar final record information.
   7. Deliver tools, spare parts, and extra stocks of material and similar physical items to the Owner.

8. Make final change-over of locks and transmit the keys to the Owner advising the Owner's personnel of the change-over in security provisions.
9. Complete start-up testing of systems and instruction of the Owner's operating and maintenance personnel. Discontinue and remove temporary facilities and services from the project site, along with construction tools and facilities, and similar elements.
10. Complete final cleaning up and touch up requirements, including repair, restoration and/or painting of marred exposed surfaces.

GC 9.1 Prevailing Wage Rates

Delete A. and Replace with

The Contractor and subcontractors shall be bound by and comply with all federal, state and local laws with regard to minimum wages, overtime work, hiring and discrimination, including Chapter 338 of the NRS, which is entitled, "Public Works Projects." The Contractor shall ensure that all employees on the work site are paid in accordance with the CURRENT PREVAILING WAGE RATES AS APPROVED BY THE STATE LABOR COMMISSIONER, whenever the actual value of the Contract totals Two Thousand Dollars ($2,000) or more, or when required by the Special Conditions. A copy of the rates are attached hereto and included herein. If a Change Order causes a Contract to exceed Two Thousand Dollars ($2,000), the State Labor Commissioner may audit the entire Contract period.

SC.5 SPECIAL PROVISIONS

At the request of the Contractor, a digital copy of the Preliminary Geotechnical Investigation for the Proposed Carson City Animal Shelter, dated January 20, 2015, by Resource Concepts, Inc., can be emailed. Contact Laura Tadman

SC.6 TECHNICAL SPECIFICATION MODIFICATIONS

A. Mechanical/Electrical Requirements of General Work:
   1. Refer to Division-15 and Division-16 sections for characteristics of mechanical and electrical services to be connected to units of general work, and provide units manufactured/fabricated for proper connection and utilization of available services as indicated.
   2. Service Connections: Except as otherwise indicated, final connection of mechanical services to general work is defined as mechanical work, and final connection of electrical services to general work is defined as electrical work.
   3. Electrical Requirements: Except as otherwise indicated, comply with applicable provisions of NEC and standards by NEMA, for electrical components of general work. Provide UL listed and labeled products where applicable.

SC.7 PLAN DETAIL MODIFICATIONS

SC.7.1 Modify PCC Curb & Gutter Type 1 Detail note 2 to "ALL CONCRETE CURB & GUTTER SHALL HAVE ½ INCH FIBEROUS EXPANSION JOINTS EVERY 200 FEET, AT BEGINNING AND ENDS OF CURB, AND AT BOTH ENDS OF DRIVEWAYS. Type A Sidewalks shall match fiberous joint locations on the curb.

SC.7.2 Included in the project will be a 6-ft temporary chainlink fence that separates the project area from the corporation yard.

END OF SPECIAL CONDITIONS

TECHNICAL SPECIFICATIONS

List of Specifications related to the site.

No. 2001 STAKING, EXCAVATION, BACKFILLING AND COMPACTING FOR WATER LINES
No. 2002 WATER SERVICE CONNECTIONS
No. 2003 POLYETHYLENE TUBING
No. 2004 TAPPING SLEEVES AND SERVICE SADDLES
No. 2005 POLYVINYL CHLORIDE PIPE
No. 2009 GATE VALVES
No. 2012 FIRE HYDRANTS
No. 2013 THRUST BLOCKS
No. 2015 WATER MAIN HYDROSTATIC TESTING
No. 2016 WATER MAIN DISINFECTING
No. 2017 UNDERGROUND MARKING TAPE AND TRACER WIRE
No. 3001 STAKING, EXCAVATION, BACKFILLING AND COMPACTING FOR SEWER LINES
No. 4005 CONCRETE CURB, GUTTER, WALKS, AND DRIVEWAYS
No. 4007 ASPHALT CONCRETE PAVEMENT
WATERBORNE PAVEMENT STRIPING
STEEL & CHAIN LINK FENCES, GATES & OPERATORS
VINYL FENCE

TECHNICAL SPECIFICATIONS

Document No. 2001 STAKING, EXCAVATION, BACKFILLING AND COMPACTING FOR WATER LINES (6/16/2014)

1. General:

1.1. Before any excavation on the project, Contractor shall notify all local utility companies and "Call Before You Dig" at 1-800-227-2600. Excavation shall include the removal of all materials or obstructions of any nature, the installation and removal of all sheeting and bracing and the control of water necessary to construct the work as shown. Excavation work shall be performed in a safe and proper manner with suitable precautions taken against hazards of every kind. Sheeting and shoring shall conform to the requirements of OSHA and Section 305.06 of the Standard Specifications. There is a significant likelihood that groundwater will be encountered during trenching excavation. Contractor shall be prepared to install and maintain pumping equipment necessary to control groundwater during construction.

1.2. Backfill during freezing weather shall not be done except by permission of Construction Manager. No backfill material shall be installed on frozen or yielding surfaces, nor shall frozen materials, snow or ice be placed in any backfill.

2. Reference Standards:

2.1. Relative compaction or density, when hereinafter referred to, means the in-place dry density of the soil expressed as a percentage of the maximum dry density of the same soil as determined by the ASTM D1557-91 test procedure. The costs of site compaction or density testing shall be paid for by Carson City. The costs of all retests (from failed tests) shall be paid for by Contractor.

3. Staking Out the Work:

3.1. Contractor shall retain a Nevada Licensed Professional Land Surveyor, and the Surveyor or his Subordinates shall stake out the horizontal and vertical positions of all the Work. Contractor shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors found on the drawings. Where new construction connects to existing facilities, Contractor shall pothole and establish the exact locations and elevations prior to construction of the facilities.

3.2. It shall be Contractor’s responsibility to expose the existing water lines at the points of connection for the new lines and maintain the depths of cover and slopes as indicated on the drawings. It shall also be Contractor's responsibility to:

A. Pothole existing utilities and, after approval by Construction Manager, modify water line grade as required to match or avoid existing utilities while maintaining the depth of cover required and the general slope of the pipe to prevent high points in the pipeline.

B. Maintain the minimum amount of cover shown on the drawings, except as approved by Construction Manager.

C. Adjust depth of cover, after approval by Construction Manager, as required to prevent changes in the pipe slope which would create high points at locations other than those indicated on the drawings.

D. Have the Work staked in accordance with the lines and grades as shown on the drawings.

4. Trench Work:

4.1. Trench Configuration and Alignment:

4.1.1 Trenches shall be excavated to provide for the bedding as specified in subsection 5.1 Bedding.

4.1.2 The new pipeline shall be laid essentially as per the alignments and grades shown on the drawings.

4.1.3 Trenches and other excavations shall have the minimum width which Contractor can effectively excavate and install the improvements. Excessive widths will not be permitted. Trenches shall have a minimum width of twenty-four (24) inches greater than the outside diameter of the pipe to be installed. Deviations from this minimum width must be submitted to Construction Manager in writing for approval. The bottom of the trench shall be graded uniformly to provide a minimum cover of forty-two (42) inches over the top of the pipe unless otherwise shown on the drawings, provide continuous bedding support under the pipe, and to allow the pipe to be laid to the grades and alignments shown in the drawings.

4.2 Pipe Bedding: The trench shall be over excavated to a depth of at least six (6) inches below the bottom of the pipe and backfilled to the required grade of the bottom of the pipe with bedding material. The pipe bedding shall be brought to optimum moisture content and compacted to not less than 90% relative density. The pipe bedding at the trench bottom shall have a flat or semicircular cross section. The bottom of the trench for all pipe shall be graded and prepared to provide a firm and uniform bearing surface throughout the entire length of each pipe section except for excavation required at joints. Pipe couplings shall not rest on the trench bottom and laying the pipe on mounds will not be allowed.

4.3 Bedding through the Pipe Zone: After center loading the pipe to prevent lateral movement, bedding material shall be placed in the trench simultaneously on each side of the pipe for the full width of the trench in layers not to exceed eight (8) inches in depth. Each layer or lift shall be compacted to at least 90% of maximum density evenly, on each side of the pipe throughout the pipe zone. The pipe zone is to extend from bottom of the pipe to twelve (12) inches above the top of the pipe and shall be backfilled with bedding material as specified herein.

4.4 Backfill Above the Pipe Zone: From twelve (12) inches above the top of pipe to the top of the trench, if not in existing pavement, or bottom of the pavement structure, if in existing pavement, pipe backfill shall consist of material as specified in subsection 5.2 Backfill. No oil cake, bituminous pavement, concrete, rock or other lumpy material shall be used in the backfill. Backfill material shall be compacted to not less than 90% relative density. All trenches shall be backfilled after pipe fittings and appurtenances have been installed, inspected and approved. All trash, wood, large rocks, waste material and other objectionable debris shall be removed from excavation prior to any material being placed in the trench. Backfill shall include the refilling and compacting of the trench or excavation.

4.5 Where existing underground pipes or conduits larger than three (3) inches in diameter cross the trench above the new work, the backfill from the bottom of the trench to the spring line of the intersecting pipe or conduit shall be Crushed Gravel Base material, Type 2, Class B, Aggregate Base conforming to the requirements of Section 200.01.03 of the Standard Specifications, compacted to 90% of maximum density. The aggregate base material shall extend two (2) feet on either side of the intersecting pipe or conduit which will insure that the material will remain in place while other backfill is placed.

4.6 Backfill by jetting shall not be allowed. Backfill shall be densified by mechanical compaction

5 Site Excavation:

5.1 The bottom of the excavation shall not be more than one-tenth (0.10) foot above or below the lines and grades specified. If the elevation of structure excavation is not specified the excavation shall be not more than one-tenth (0.10) foot above or below the elevation specified for fill material below the structure. Cut slopes shall vary no more than five-tenths (0.5) foot from specified grade unless the excavation is in rock where the maximum variation should be two (2) feet. Unless otherwise specified, excavations shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services, and for inspection, except where concrete is specified to be placed directly against excavated surfaces. Upon completion of excavation, the existing subgrade shall be compacted to a minimum of 95% relative density.

5.2 Should the excavation be carried below the lines and grades specified on the drawings, or should the bottom of the excavation be disturbed because of Contractor's operations and require over-excavation and backfill, Contractor, at his expense, shall refill such excavated space to the proper elevation in accordance with the procedure specified for backfill.

6 Rock Excavation and Blasting:

6.1 No blasting will be permitted without the approval of Construction Manager. When blasting is permitted, it shall be done only by skilled operators and under the direction of a competent, properly licensed foreman.

6.2 Blasting will be permitted only when proper precautions are taken for the protection of persons, the work, and existing structures. Any damage done to persons, private property, the work, or existing structures shall be the responsibility of Contractor.

6.3 Blasting shall be done with explosives of such power and in such quantities and positions as not to make the excavation unduly large, or to shatter the faces of cuts which are to remain open. Excessive blasting or "overshooting" will not be permitted, and any material outside the authorized cross-section which may be shattered or loosened by blasting shall be removed and replaced with earth as herein specified, at Contractor's expense. Construction Manager shall have authority to require Contractor to discontinue any method of blasting which leads to "overshooting" or is dangerous to the public or destructive to property or to natural features.

6.4 Permits for blasting shall be obtained and paid for by Contractor.

7 Sheeting and Shoring:

7.1 Excavation for trenches shall be properly and substantially sheeted, braced, and shored as required by trench conditions. Sheeting, bracing, and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure and shall be rigid, maintaining shape and position under all circumstances. Contractor’s design for all sheeting and shoring shall be signed and sealed by a licensed Nevada Civil or Structural Engineer and the drawings submitted to Construction Manager prior to its construction.

7.2 During backfilling, any shoring shall be carefully removed by Contractor in such a manner as will result in a minimum of caving, lateral movement, or flowing of the soil. On approval of Construction Manager, Contractor may leave shoring in place, but in such an event, no payment will be made by Carson City for such materials left in place. Where trench shoring is left in place, it shall not be braced against the pipe.

8 Materials:

8.1 Bedding:

8.1.1 Pipe bedding material shall conform to the requirements of Section 200.03.02, Class A Backfill, of the Standard Specifications.

8.1.2 Bedding shall be placed in accordance with Section 305.08, Bedding, of the Standard Specifications.

8.2 Backfill:

8.2.1 Trench backfill shall conform to the requirements of the Standard Specifications, Section 200.03.06, Class E Backfill, unless otherwise specified.

8.2.2 Trench backfill shall be placed and compacted in accordance with Section 305, Trench Excavation and Backfill, of the Standard Specifications.

8.2.3 Backfill for any structure shall be Crushed Gravel Base material, Type 2, Class B, Aggregate Base conforming to the requirements of Section 200.01.03 of the Standard Specifications. No backfill material shall be deposited against concrete structures until the concrete has developed a minimum strength of 3,000 psi.

8.2.4 If site excavated material meets the requirements for Class “E” Backfill but exceeds optimum moisture content, Contractor shall take whatever measures are necessary to dry the material to compactable moisture content. No additional compensation shall be allowed for such measures. If site excavated material does not meet "Class E Backfill" requirements in accordance with the Standard Specifications, Contractor may be directed by Construction Manager to remove and dispose of the unsuitable material to an approved disposal location and import acceptable material.

8.3 Pavement Structure:

8.3.1 Defined as that section from the top of the backfill to the road wearing surface. This section shall consist of Crushed Gravel Base material, Type 2, Class B, aggregate base conforming to the requirements of Section 200.01.03 of the Standard Specifications, compacted to 95% maximum dry density overlaid with asphalt concrete at a depth to match contiguous pavement, but not less than that specified in roadway sections. Refer to the Permanent Pavement Patch Detail on the drawings, and if applicable, also refer to the Patching Details for Work within NDOT Right-of-Way.

9 Construction:

9.1 Maximum Length of Open Trench:

9.1.1 Except by permission of Construction Manager, the maximum length of open trench where prefabricated pipe is used shall be five hundred (500) feet, or the distance necessary to accommodate the amount of pipe installed in a single day, whichever is the greater.

9.2 Control of Water:

9.2.1 When water is encountered, Contractor shall furnish, install, maintain and operate all necessary machinery, appliances, and equipment to keep excavations free from water until the placing of the bedding material, laying and jointing of the pipe, pouring of

concrete, and placing of the backfill material has been completed, inspected, and approved and all danger of flotation and other damages is removed. Groundwater pumped from the trench shall be disposed of in such a manner as will not cause injury to public or private property, or constitute a nuisance or menace to the public, and shall be subject to the prior approval of Construction Manager and all regulatory requirements of the State of Nevada. If well points are used for dewatering, they shall be removed or abandoned according to State of Nevada regulations.

9.3 Special Foundation Treatment:

9.3.1 Whenever the bottom of the trench is soft, yielding, or in the opinion of Construction Manager otherwise unsuitable as a foundation for the pipe, the unsuitable material shall be removed to a depth approved by Construction Manager and replaced with suitable material approved by Construction Manager. Payment for this work will be made only if the bottom of the trench has become unstable due to circumstances beyond the control of Contractor. Payment for this work will be made as specified in subsection 6.4 Modification Procedures of the General Conditions unless otherwise provided for in these Contract documents.

9.4 Restoration of Roadway Surfaces:

9.4.1 All road shoulders and pavement which are broken or damaged due to Contractor's operations shall be reconstructed by Contractor at no additional cost to Carson City. Reconstruction shall be subject to the approval of Construction Manager.

9.5 Repairs Required by Trench Settlement:

9.5.1 If, at any time during a one (1) year period from the date of final acceptance of the project, there is any settlement of the trenches requiring repairs to be made, or should any other defect appear in the system due to negligence or carelessness on the part of Contractor, Carson City will notify Contractor to immediately make such repairs as may be deemed necessary at Contractor's expense.

10 Surplus Material:

10.1 All surplus material shall be disposed of offsite in accordance with applicable ordinances and environmental requirements. Contractor shall be responsible for ultimate disposal of surplus material. He shall also include in his bid the cost for disposal, in accordance with City, State, and Federal environmental laws, of all Asbestos Cement Pipe removed during construction.

END OF DOCUMENT 2001

TECHNICAL SPECIFICATIONS

Document No. 2002 WATER SERVICE CONNECTIONS (6/16/2014)

1. Scope:

1.1. The work to be done under this Section consists of furnishing all labor, equipment, materials, supplies and incidentals necessary for installation of water service connections, and fire service connections.

2. Materials:

2.1. Service Connection Size:

2.1.1. The size of service connections shall be as shown on the construction drawings. All components of a service connection shall be the same size as the nominal designation of the service connection pipe; i.e., a one (1) inch connection will consist of a one (1) inch service saddle, and a one (1) inch corporation stops, unless otherwise shown on the drawings.

2.1.2. When replacing an existing service connection, if the existing service size encountered is larger than the existing service shown on the drawings, and the drawings do not indicate to replace to the larger size, the service shall be replaced to match the existing service. Contractor shall be compensated for the increase in size.

2.2. Service Saddles:

2.2.1. Service Saddles shall be manufactured specifically for the type and size of pipe upon which they are being used. The Service Saddle bodies shall be stainless steel or dipped fusion bonded epoxy coated ductile iron.

2.2.2. The bands (straps), nuts, and bolts shall be of 18-8 stainless steel. The bands of D.I. saddles shall be two (2) inch wide. One band shall be supplied for up to one (1) inch service sizes and two (2) for over one (1) inch. The gasket shall be constructed of Buna-N or Neoprene. The inlet threads shall be AWWA I.P. Thread.

2.3. Corporation and Curb Stops:

2.3.1. Corporation stops shall be constructed of brass (Red Brass 85-5-5-5) and have AWWA I.P. Threads inlet and outlets suitable for flared connections to PE pipe. Corporation and curb stops shall be manufactured by Ford, Mueller or approved equal. Curb stops shall be the inverted key type, constructed of brass.

2.4. Meter Pit Setters and Boxes:

2.4.1. Meter pit setters for 3/4 “ and 1" meter installations shall be the Carson City Standard Mueller/McCullough Thermal-Coil Meter Box complete with integral riser, inlet angle valve, and outlet check valve. Pit setter shall be fifteen (15) inches minimum diameter for single 3/4 “ meter installations, and eighteen (18) inches minimum for double 3/4" meter installations and single 1" installations. Pit setters for 1-1/2" and 2" meter installations shall be as shown on the drawings.

2.4.2. Meter boxes for 3" to 8" meter installations shall be the Carson City Standard Christy B52 with M3 lid or as shown on the drawings.

3. Workmanship:

3.1. General:

3.1.1. Contractor shall install the water service; make all connections as required to the main, connection to the new meter service, and connection between the new meter and the building supply line or irrigation supply line as indicated on the drawings.

4. Installation:

4.1. Prior to installing the service saddle or tapping sleeve, remove all dirt or other foreign matter that may impair the quality of the completed connection. Then place service saddle or tapping sleeve at the desired location but not within eighteen inches (18") of any fitting, coupling, valve, bend, or end of pipe. Tighten as per manufacturer's recommendation.

4.2. Tubing shall be cut with square ends, reamed and flared with the proper size flaring tool, cleaned, and made up tightly. Care shall be taken to prevent the tube from kinking or buckling on short radius bends. Kinked or buckled sections of tube shall be cut out and the tube spliced with the proper brass fittings, at Contractor's expense. All fittings, including reducers, shall be brass.

4.3. Connections between the new service, building supply line or irrigation supply line, and existing service or supply lines shall be neat and watertight with adequate pipe to prevent stress at joints.

5. Existing Meter Relocations:

5.1. Contractor shall, ONLY in the presence of the Carson City Inspector, remove individual meters from the existing pit setter or meter set, and immediately relocate the meter to the new pit setter or meter set. Domestic meters shall be relocated so that they serve the same domestic building supply line as before the relocation. Irrigation meters shall be relocated so that they serve the same irrigation supply line as before the relocation.

6. New Meter Installations:

6.1. Contractor shall obtain from Carson City a no cost Permit for a new meter installation. Upon completion of the water service installation and acceptance of all testing and inspection of the new water service and any applicable water main, Contractor shall submit a completed "Utility Billing Water/Sewer Service Application" to Construction Manager. Carson City will then install the new meter.

END OF DOCUMENT 2002

TECHNICAL SPECIFICATIONS

Document No. 2003 POLYETHYLENE TUBING (6/16/2014)

1. General:

1.1. This section covers polyethylene tubing which shall be furnished and installed complete and in place with all jointing materials, fittings and other appurtenances as shown on the Plans or as otherwise required for a complete installation.

2. Materials:

2.1. Tubing:

2.1.1. Polyethylene tubing shall conform to NSF Standard No. 14, AWWA Standard C901, and to the specifications of ASTM D 2737. Polyethylene tubing shall be copper tubing size (CTS) , pressure class 200, have a dimension ratio (DR) of not more than 9.0, and shall be made with materials designated PE3408 by the Standard PE Code.

2.1.2. All repairs or connections to new or existing P.E., copper or galvanized water service lines, “to 2", shall be MUELLER CTS 110 COMPRESSION TYPE FITTINGS OR APPROVED EQUAL.

2.2. Fittings:

2.2.1. Fittings shall meet the requirement set forth in AWWA C901 and shall be Flare-Nut type.

3. Installation:

3.1. Polyethylene tubing shall be installed in accordance with the manufacturer's recommendations and in accordance with AWWA C901.

END OF DOCUMENT 2003

TECHNICAL SPECIFICATIONS

DOCUMENT No. 2004 TAPPING SLEEVES AND SERVICE SADDLES (6/16/2014)

1. General:

1.1. This section specifies tapping sleeves (For four (4) inch pipe or larger) and service saddles (For pipe sizes less than four (4) inches) to be installed for hot tapping of potable water mains. ALL HOT TAPS GREATER THAN TWO INCHES (2") PERFORMED ON FOUR INCH (4") OR GREATER POTABLE WATER MAINS ARE TO BE PERFORMED BY CARSON CITY PUBLIC WORKS DEPARTMENT.

2. Tapping Sleeves:

2.1. Tapping sleeves shall be constructed of the following materials:

Item	Material
Shells & Lugs	18-8 Type 304 Stainless Steel.
Flange	18-8 Type 304 Stainless Steel or high tensile ductile (nodular) iron conforming to ASTM A536-80, Grade 65-45-12.
Welds	Fully passivized for corrosion resistance.
Bolts	5/8" Diameter, 18-8 Stainless Steel National Course rolled thread, fluorocarbon coated to prevent galling.
Nuts & Washers	18-8 Stainless Steel.
Gasket	Virgin styrene butadiene rubber compounded for water service conforming to ASTM D2000-80MA AAA607 with 360 degree pipe coverage. Working pressure: 150 p.s.i

3. Service Saddles:

3.1. Service saddles shall be constructed of the following materials:

ITEM	MATERIAL
Welds	Fully passivized for corrosion resistance.
Bands & Bolts	5/8" Diameter 18-8 Stainless Steel National Course rolled thread, fluorocarbon coated to prevent galling.
Nuts & Washers	18-8 Stainless Steel.
Finish	Approximately twelve (12) mils of fusion applied epoxy coating conforming to AWWA 213-91.

4. Installation:

4.1. Tapping sleeves and service saddles shall be located as shown on the plans and installed in accordance with the manufacturer's recommendations. Tapping sleeves 4" and larger shall have a thrust block and the concrete used for thrust blocking shall not prevent access to the bolt assembly. Tapping sleeves and service saddles shall, in all respects, be constructed similar to the Romac brand or approved equal, meeting material requirements specified within this section.

4.2. The tapping sleeve shall be pressure tested to the class rating of pipe for a minimum of 5

minutes prior to hot-tap. The pressure tests shall be performed in presence of a Carson City Public Works Department staff member.

4.3. Mechanical fittings, joints and appurtenances shall be assembled and installed using a torque measuring or torque-indicating wrench and per AWWA standards. The use of an impact wrench or similar construction method is prohibited.

4.4. Contractor shall give written notice, either hand delivered or by fax, to Construction Manager five (5) working days prior to the performance of any Hot-Taps by Carson City. (Carson City Public Works, 3505 Butti Way, Carson City, Nevada 89701, Fax # (775) 887-2112.

END OF DOCUMENT 2004

TECHNICAL SPECIFICATIONS

DOCUMENT No. 2005 POLYVINYL CHLORIDE PIPE (6/16/2014)

1. General:

1.1. This section covers pressure water supply polyvinyl chloride pipe which shall be furnished and installed complete with all jointing materials, fittings and other appurtenances shown on the drawings or otherwise required for a complete installation. Contractor shall furnish, install and test pipe, fittings and appurtenances of the dimensions and types and to the lines and grades shown on the drawings and specified herein.

2. Unloading PVC Pipe:

2.1. Prolonged exposure to temperatures near freezing make PVC sensitive to impact and extra care shall be taken in handling PVC during cold weather.

2.2. PVC pipe may be off-loaded by hand, either by passing over the side or off the truck end. Sliding one (1) length on another is standard practice in unloading PVC pipe, but lengths in the bottom layer shall be lifted off of the rough surface of the truck body to avoid erosion.

2.3. Compact shipping units (palletized bundles in a wood frame) are used to ship large orders of pipe. These units can be unloaded by conventional fork lifts.

3. Materials:

3.1. Pressure Pipe:

3.1.1. PVC pressure pipe shall conform to AWWA C900 or C905, as shown on the drawings. Pressure class for C900 or pressure rating for C905 shall be as shown on the drawings and have an outside diameter equivalent to that of cast iron pipe. The standard pipe length shall be twenty (20) feet.

3.1.2. PVC pressure piping shall be manufactured by CertainTeed Corporation; Diamond Plastic Corporation; Northern American Pipe Corporation or Northern Pipe Products. Any other manufacturer shall require a formal substitution request.

3.1.3. All PVC pipe and fittings shall be installed within one hundred twenty (120) calendar days from date of manufacture. Contractor shall submit manufacture date to Construction Manager prior to pipe installation. Contractor shall avoid, to the extent possible, prolonged exposure of Polyvinyl Chloride Pipe to sun and/or temperatures near or below freezing.

3.2. Identification Marks:

3.2.1. Pipe and couplings shall be clearly and permanently marked with all information required by AWWA C900 and AWWA C905, respectively.

3.3. Testing:

3.3.1. All materials shall be sampled and tested in accordance with all requirements of AWWA C900 and AWWA C905, respectively. Pipe not manufactured in the United States shall be tested as required above by an approved testing laboratory within the United States.

3.4. Affidavit of Compliance:

3.4.1. The manufacturer shall furnish an affidavit of compliance certifying that all tests have

been conducted and that the materials comply with the applicable standards and these specifications. Test information shall be retained and shall be available if required by Engineer.

3.5. Couplings:

3.5.1. Each length of pipe shall be furnished with a coupling consisting of either a PVC sleeve and two (2) sealing rings or an integrally cast bell and one (1) sealing ring designed to hold the pipe in alignment, provide flexibility, separate the ends of the pipe lengths, resist applied earth pressures and provide fluid tightness.

3.6. Rubber Rings:

3.6.1. Rubber rings shall conform to Subsection 203.15.03.01 of the SSPWC.

3.7. Fittings:

3.7.1. Fittings shall be PVC, short body gray iron, or ductile iron conforming to ANSI A21.10 (AWWA C153 or C110). Cast iron fittings for pipe twelve (12) and smaller shall be pressure rated for 250 psi. Ductile iron for fittings shall conform to ASTM A536 Grade 80-60-03 or 70-5-05 and fittings for pipe twenty-four (24) inches or smaller shall be pressure rated for 350 psi.

3.8. Joints:

3.8.1. Flanged Joints:

3.8.1.1. Flanges shall conform to ANSI B16.1 and shall be 250 psi, flat-faced. Bolts shall be of corrosion-resisting steel conforming to the requirements of ASTM A193, Grade B7. Bolts shall conform to ASTM A194, Grade 2H Heavy Series. The fit shall be free fit (Class 2), except that medium fit (Class 3) shall be provided in holes tapped for studs. Bolts and nuts used for submerged service shall be made from Type 304 stainless steel and shall conform in design to the above specifications.

A. Studs and bolts shall be of such length that no less than 1/4 inch nor more than 1/2-inch will be projected through the nut when drawn tight. All bolt heads and nuts shall be hexagonal except where special shapes are required.

B. Gaskets shall conform to ASTM D1330, Grade I, red rubber, full faced, 1/8-inch thick.

3.8.1 Mechanical Joints:

3.8.1.1 Mechanical joints shall conform to ANSI A21.11.

3.8.2 Push-on Joints:

3.8.2.1 Push-on joints shall conform to ANSI A21.11 except that gaskets shall be neoprene or other synthetic rubber. Push-on joints shall have their ring grooves and rings compatible with the pipe ends. The grooves shall be gauged for tolerance before arriving at the job site and the grooves and interior surfaces of the bell shall be smooth and free from ridges, notches and uneven surfaces.

3.9 Restraints

3.9.1 All restraints shall be Romac Industries “600” Series, Diamond Plastics Diamond Lok, RomaGrip or approved equal.

4 Installation:

4.1 Installation shall conform to the manufacturer's recommendations except as modified by these specifications and as shown on the drawings.

4.2 All laying, jointing and testing for defects and leakage shall be performed in the presence of Engineer and shall be subject to his approval before acceptance. Materials found during construction to have defects will be rejected and Contractor shall promptly remove such defective material from the site.

5 Trenching, Bedding and Backfill:

5.1 Requirements for trenching, bedding and backfill shall be as specified; as required by applicable permits and regulations; and as required by applicable safety codes.

5.2 Pipe shall be laid on a shaped trench foundation or shaped bedding as required and with properly dug bell or coupling holes. Supporting pipe on blocks or mounds of earth or bedding material will not be permitted.

6 Handling and Stockpiling:

6.1 Pipe, fittings and accessories shall be handled in a manner that will insure installation in a sound, undamaged condition. Equipment, tools and methods used in unloading, reloading, hauling and laying pipe and fittings shall be such that the pipe and fittings are not damaged. Hooks inserted in ends of pipe shall have broad, well-padded contact surfaces. No unpadded hooks or wire brushes shall be permitted to contact plastic lining. Pipe and fittings in which lining has been broken, split or loosened shall be replaced by and at the expense of Contractor. Where damaged areas are small and readily accessible, Contractor may be permitted to repair the lining in accordance with the manufacturer's instructions. Store pipe on a flat surface so as to support the barrel evenly. Store random lengths separately where they will be readily available. Individual lengths of pipe should be stocked in piles of no higher than three (3) feet. If pipe is to be stored outside for periods longer than thirty (30) calendar days, the pipe must be covered to protect it from prolonged exposure to the sun's rays. The pipe shall be covered with canvas or another opaque material which shall not be clear plastic sheets. Provisions shall be made for air circulation under the sheet.

6.2 Cutting

6.2.1 Cutting and machining of pipe shall be accomplished in accordance with the pipe manufacturer's standard recommendations. Pipe shall not be cut with a cold chisel, flame, standard iron pipe cutter, or any other method that may fracture the pipe, produce ragged, uneven edges or split the pipe end. Cut ends shall be machined smooth to the proper dimensions.

7 Pipe Laying:

7.1 The pipe shall be laid to the lines and grades shown on the drawings and specified herein and the sections shall be closely jointed to form a smooth flow line. Immediately before placing each section of pipe in final position, the bedding shall be checked for firmness and uniformity of surface.

7.2 The radius of curvature of the trench shall determine the maximum length of pipe section that

can be used without exceeding the allowable deflection at a coupling. The deflection at any flexible joint shall not exceed that prescribed by the manufacturer of the pipe. The manufacturer's printed installation guide outlining the radii of curvature that can be negotiated with pipe sections of various lengths shall be followed.

7.3 Proper implements, tools, and facilities as recommended by the pipe manufacturer's standard printed installation instructions shall be provided and used by Contractor for safe and efficient execution of the work. All pipe, fittings, valves, and accessories shall be carefully lowered into the trench by means of derrick, ropes, or other suitable equipment in such a manner as to prevent damage to pipe and fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench.

7.4 The pipe and accessories shall be inspected for defects prior to lowering into the trench. Any defective, damaged or unsound pipe shall be repaired or replaced. All foreign matter or dirt shall be removed from the interior of the pipe before lowering into position in the trench. Pipe shall be kept clean during and after laying. All openings on the pipe line shall be closed with watertight expandable type sewer plugs or test plugs at the end of each day's operation or whenever the pipe openings are left unattended. The use of burlap, wood, or other similar temporary plugs will not be permitted.

8 Distributing Along the Trench:

8.1 Pipe should be strung as near the trench as possible, but, if the trench has not been dug, it shall be kept out of the way of the excavator. It shall be protected from blasting, traffic, equipment or other hazards. Where damage as a result of vandalism could occur, only enough pipes for one day's laying shall be strung. The pipe shall be strung so that the bell ends point in the direction that the work is progressing.

9 Jointing:

9.1 Each pipe joint shall be joined either with a coupling consisting of a PVC sleeve and two (2) rubber gaskets, or an integral bell with one (1) rubber gasket.

9.2 The gasket and the gasket seat inside the collar or bell shall be wiped clean before the gasket is inserted. At this time a thin film of lubricant shall be applied to the gasket and to the outside of the clean pipe end. Lubricant other than that furnished with the pipe shall not be used. The end of the pipe shall be then forced into the collar or bell to complete the joint.

9.3 The assembly of the joint shall be made in accordance with the printed recommendations of the manufacturer. This shall be accomplished with an assembly tool if so recommended by the manufacturer, so that the resulting position of the sleeve shall be such that is centered over pipe ends. After assembly of the coupling, the rubber gasket location shall be checked with a suitable gauge. Gaskets for the full circumference of the pipe shall be located at a distance from the coupling or bell end as recommended by the manufacturer of the couplings, if the distance does not fall within required limits, the joint shall be disassembled and reassembled in an acceptable manner.

9.4 When pipe laying is not in progress, the open end of the pipe shall be closed by approved means to prevent trench water from entering pipe. Adequate backfill shall be deposited on pipe to prevent floating of pipe. Any pipe which has floated shall be removed from the trench, cleaned, and re-laid in an acceptable manner. No pipe shall be laid when, in the opinion of Engineer, the trench conditions or weather are unsuitable for such work.

10 Installation of Fittings:

10.1 Fittings shall be installed utilizing standard installation procedures. Fittings shall be lowered into trench by means of rope, cable, chain, or other acceptable means without damage to the fittings. Cable, rope, or other devices used for lowering fitting into trench, shall be attached around exterior of fitting for handling. Under no circumstances shall the cable, rope or other device be attached through the fitting's interior for handling. Fittings shall be carefully connected to pipe or other facility, and joint shall be checked to insure a sound and proper joint.

10.2 Mechanical fittings, joints and appurtenances shall be assembled and installed using a torque measuring or torque-indicating wrench and per AWWA standards. The use of an impact wrench or similar construction method is prohibited.

11 Thrust Blocking:

11.1 Concrete thrust blocking shall be provided at all tees, elbows, wyes, caps, valves, hydrants, reducers, and other points of unbalanced thrust. Thrust blocking shall be poured so the thrust surface bears against undisturbed soil. Thrust blocking shall be as specified in Document No. 2013 Thrust Blocks of these Technical Specifications.

END OF DOCUMENT 2005

TECHNICAL SPECIFICATIONS

DOCUMENT No. 2009 GATE VALVES (6/16/2014)

1. General:

1.1. This section specifies underground gate valves and appurtenances to be installed on water or reclaimed water mains where shown on the drawings in accordance with the Carson City Standard Details C-10.1, Gate Valve(and C-10.3, Valve Box & Lid.

1.2. Gate Valves shall be American AVK, American Flow Control, Clow, M & H, Mueller or equal resilient-seated gate valves conforming to AWWA C509 or C515 and shall be UL listed and FM approved.

2. Design:

2.1. Valve shall be non-rising stem (NRS) wedge type resilient-seated with O-Ring stem seals and low zinc copper alloy or stainless steel stem, equipped with a two (2) inch standard operating nut. Ends shall be designed for direct connection to the type of pipe or fitting which the valve is adjoined to, or as shown on the drawings. Valves shall open when turned counterclockwise.

2.2. The minimum design working pressure for valves twelve (12) inches in diameter and smaller shall be 200 psig and shall be 150 psig for larger valves. Valves shall be designed to have full port opening for unrestricted flow. The valve waterway shall be smooth and shall have no depressions or cavities in seat area.

3. Valve Boxes:

3.1. Concrete valve boxes with cast iron covers shall be provided for all buried valves. Valve boxes shall be provided with colored PVC (schedule 40 minimum) extension sleeves. Valve box covers shall be labeled, with pick hole access. Valve boxes and covers shall be Christy G5 traffic valve box with G5C lid, or approved equal.

4. Installation:

4.1. Valves shall be installed as shown on the drawings with support block and valve box and riser. Valves shall be installed with valve box centered over operating nut and plumb.

4.2. All valves shall be operated by Contractor prior to and following installation to assure free movement, proper seating and full-port opening.

4.3. Mechanical fittings, joints and appurtenances shall be assembled and installed using a torque measuring or torque-indicating wrench and per AWWA standards. The use of an impact wrench or similar construction method is prohibited.

5. Protective Coatings:

5.1. Valves shall be provided with a shop-applied fusion-bonded epoxy coating on interior and exterior surfaces conforming to AWWA C550.

5.2. Any damage to the protective coating including scratches, nicks, etc. shall be repaired prior to the installation using an approved coating conforming to AWWA C509 Sec. 4.2.2.8. or AWWA C515 Sec. 4.2.2.6.

5.3. All exposed metal on valves and fittings such as nuts and bolts including damage during installation shall be coated prior to backfill with an approved coating conforming to AWWA C509 Sec. 4.2.2.8 or AWWA C515 Sec. 4.2.2.6.

6. Valve Identification:

6.1. All valves located outside the pavement structure shall be identified with a Utility Marker. Water valve makers shall be blue Carsonite Utility Marker (CRM300608), 5'-2" with blue valve decal (116CVW) or approved equal. Marker shall be installed no more than 5 feet from the valve measured perpendicular to the water main or roadway.

END OF DOCUMENT 2009

TECHNICAL SPECIFICATIONS

Document No. 2012 FIRE HYDRANTS (6/16/2014)

1. Scope:

1.1. The work to be done under this section consists of furnishing all plant, labor, equipment, materials, supplies and incidentals and performing all work required for furnishing and installing the fire hydrant assemblies, complete.

2. Trench Excavation and Backfill:

2.1. Trench excavation and backfill shall conform to the requirements as specified in Document No. 2001 Staking, Excavation, Backfilling and Compacting for Water Lines of these Technical Specifications.

3. Pipe:

3.1. The water pipe to be installed from the water main to the fire hydrant shall be the same type of pipe utilized for construction of the water system improvements.

4. Valves and Valve Boxes:

4.1. Valve and valve boxes for fire hydrants shall conform to the requirements as specified in Document No. 2009 Gate Valves of these Technical Specifications.

5. References:

5.1. References herein are made to the standards, tests, methods, and specifications of research and technical organizations as follows:

ITEM	**STANDARD SPECIFICATION, TEST OR METHOD DESIGNATION**
Fire Hydrants	AWWA C502-73

6. Materials:

6.1. Fire hydrant shall conform to the requirements of Section 307 of the Standard Specifications and this section of these Technical Specifications.

6.2. All hydrants shall be as follows:

A. The size of a valve opening shall be five and one quarter inch (5¼") with two (2) two and one half inch (2½") N.S.T. (National Standard Thread) nozzles; one Harrington HIHS five inch (5") integral hydrant Storz, or approved equal, with blind cap & cable. A yellow and black Calpico (or approved equal) "Out of Service" indicator shall be installed on one of the 2½" nozzles until the hydrant is in service and removal of the "Out of Service" indicator is authorized by the Construction Manager. The inlet connections shall be a six inch (6") size and the operating nut shall be a one and one half inch (1½") pentagon, open to the left.

B. Fire hydrants shall be of the compression type with the valve closing with the pressure. All hydrants shall be in accordance with the latest specifications of the American Water Works Association. All parts entering into the manufacture will be interchangeable. All fire hydrants shall be non-freezing and self-draining.

C. The top of the hydrant shall be constructed so that the operating threads are immersed in

an oil reservoir. The oil reservoir shall be sealed at both top and bottom by "O" rings to prevent oil or water leakage. The bonnet assembly shall be unitized and flanged to the tip barrel for easy removal as one unit without disassembly or loss of lubricant in the field. The main valve opening shall be controlled with a positive stop built into the bonnet assembly. The hydrant shall be of the safety ground flange design at a point two inches (2") above ground line. In the event of a traffic accident, the barrel will not become broken, nor the main operating stem become broken or bent, which parts shall be easily and quickly replaced. The safety flange design shall be constructed to ensure more accurate control of impact stresses and eliminate the uncertainties of frangible bolt and lug designs such as corrosive and varying bolt strength. The drain valves shall be bronzed to bronzed seat with quadring and shall be positively operated by main operating nut. The design shall permit full three hundred and sixty (360) degree rotation in any desired position location & placement of the hydrant shall be in accordance with all Fire Department regulations. Hydrants shall be constructed for lengthening or making repairs without the necessity of digging. Hydrant barrel shall be centrifugally cast ductile iron.

D. Hydrants shall be subjected, after assembly to two (2) tests under a hydraulic pressure of 300 pounds per square inch. One (1) test shall be made with the whole interior of the hydrant under pressure; and another with the main valve closed and the foot piece under pressure from the inlet side. Under the above test procedure, there shall be no leakage through the main valve, drain valve, or stuffing box, or through the castings or the joints of the assembled hydrant. Leakage or other imperfections found in either test shall be corrected before the hydrant is accepted. The test is not required for any existing fire hydrants.

7 Workmanship:

7.1 Fire Hydrant installation shall conform to the requirements of Subsection 307.09, "Setting Hydrants", of the Standard Specifications for Public Words Construction.

7.2 Contractor shall notice, coordinate and cooperate with the Fire Department before any shut-down of a fire hydrant of water line is to be made. Contractor shall keep the Fire Department fully informed on any emergency repairs being made which affect the water distribution system.

7.3 All buried metallic materials of the fire hydrant assemblies shall be encased in polyethylene (plastic wrap) in accordance with the requirements of AWWA C105.77.

7.4 Before the fire hydrant assembly is backfilled, Contractor shall contact the inspector for an inspection review using the Carson City Public Works Department "Inspection for Fire Hydrants" form. The inspection shall be performed in the presents of Contractor and the inspector. Also included in the inspection will be a check of the street valve to assure full open position.

END OF DOCUMENT 2012

TECHNICAL SPECIFICATIONS

DOCUMENT No. 2013 THRUST BLOCKS (6/16/2014)

1. General:

1.1. Thrust blocks shall be installed in the locations shown on the Drawings and in general, everywhere a buried pressure conduit changes direction according to Carson City "Standard Details for Public Works Construction".

2. Materials:

2.1. Concrete used for thrust blocks shall have a minimum compressive strength of 4000 psi at twenty-eight (28) calendar days when tested in accordance with ASTM.

3. Installation:

3.1. Thrust blocks shall be installed such that they bear against the pipe fitting (not the pipe) on one side and against undisturbed earth on the other side.

3.2. Thrust block concrete shall not obstruct removal of flange bolts from fittings. Concrete shall be prevented from adhering to the fittings. Either a liquid bond breaker shall be applied to the fitting, or an impervious membrane (plastic, building paper, etc.) shall be used.

3.3. The bearing area against the undisturbed soil shall be measured in a vertical plane, perpendicular to the axis of the pipe, or the line bisecting the extensions of the pipes entering a fitting. The bearing area shall be as set forth in the thrust block table in the Drawings.

END OF DOCUMENT 2013

TECHNICAL SPECIFICATIONS

DOCUMENT No. 2015 WATER MAIN HYDROSTATIC TESTING (6/16/2014)

1. General:

1.1. This specification supersedes Section 336.03.08, Pressure Line - Pressure and Leakage Tests, of the Standard Specifications. Water mains shall be pressure tested in accordance with all the following requirements.

2. Test Pressure:

2.1. Test pressure for water distribution pipe shall be the class designation/rating of the pipe

3. Procedure:

3.1. Pressure and leakage tests shall be performed at the same time. The total testing time for each section of a new main installed shall be a minimum of two (2) hours.

3.2. When pipeline installation, testing and backfilling can be accomplished in the same day, backfill only enough to prevent lifting of the pipe prior to filling with water and field testing. When conditions require that trenches be backfilled immediately after the pipe has been laid, testing shall be conducted prior to placement of permanent surface.

3.3. After the main has been laid it shall be filled with water for a minimum of twenty-four (24) hours before being subjected to the hydrostatic pressure test. Each section of pipeline shall be filled slowly with water and all air expelled by means of taps at points of highest elevation.

3.4. The specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to Engineer. The test pressure shall be maintained for the specified time during which all exposed pipe, couplings, fittings, valves, and hydrants shall be examined carefully.

3.5. All cracked or defective elements shall be removed and replaced and the test repeated until all visible leakage has been stopped and the requirements as specified in Subsection 4 Allowable Leakage have been met.

4. Allowable Leakage:

4.1. No pipe installation will be accepted if the leakage for the section of the line that is tested is greater than that determined by the following formula:

Allowable Leakage (gallons per hour) = $ND(P)^{½}/7400$	
Where:	N = Number of pipe joints in test section. D = Nominal diameter of pipe (inches). P = Test pressure (psig).

4.2. If the test leakage in any section is greater than permitted, Contractor shall, at his own expense, locate and repair the defective materials until the leakage is within the permitted allowance. All visible leaks shall be repaired regardless of the amount or rate of leakage.

5. Measurement of Leakage:

5.1. Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within five (5) psi (0.35 Bar) of the specified test pressure after the air in the pipeline has been expelled and the pipe filled with water. The quantity of water supplied to maintain pressure shall be quantified by means of a positive displacement measurement from a reservoir of known volume. Leakage shall not be measured by a drop in pressure in a test section over a period of time.

END OF DOCUMENT 2015

TECHNICAL SPECIFICATIONS

DOCUMENT No. 2016 WATER MAIN DISINFECTING (6/16/2014)

1. General:

1.1. Disinfection of water mains shall be accomplished in accordance with all the requirements set forth in AWWA C651-05 unless otherwise specified herein.

1.2. Precautions shall be taken to protect pipe interiors, fittings, and valves against contamination. Pipe delivered for construction shall be stored so as to minimize entrance of foreign material. When pipe laying is not in progress, for example, at the close of the day's work or during breaks or rest periods all openings in the pipeline shall be closed by water tight plugs. Joints of all pipe in the trench shall be completed before work is stopped. If water accumulates in the trench, the plugs shall remain in place until the trench is dry.

1.3. If dirt, that in the opinion of Engineer, will not be removed by flushing enters the pipe, the interior of the pipe shall be cleaned and swabbed as necessary with a 5% hypochlorite disinfecting solution.

1.4. No contaminated material capable of supporting growth of micro-organisms shall be used for sealing joints. Packing material shall be handled in such a manner as to avoid contamination.

1.5. Yarning or packing material shall consist of molded or tubular rubber rings or rope of treated paper, or other approved materials. Materials such as jute or hemp shall not be used. Packing Materials shall be handled in a manner which prevents contamination.

1.6. The lubricant used in the installation of sealing gaskets shall be suitable for use in potable water. It shall be delivered to the job in enclosed containers and shall be kept clean.

2. Procedure:

2.1. General:

2.1.1. Unless otherwise stated herein, the tablet method of disinfection shall be used. Tablets shall be calcium hypochlorite tablets, conform to ANSI/AWWA B300, and must contain approximately 65 percent available chlorine by weight. Calcium hypochlorite tablets intended for pool use shall not be used. However, since this method requires scrupulous cleanliness to be effective, it will not be allowed if trench water or foreign material has entered the main. If the pipe, in Engineer's opinion is not in a clean condition another method prescribed in AWWA C651 -05 shall be used for disinfection even if the tablets have already been installed.

2.2. Placement of Tablets:

2.2.1. Tablets shall be placed in each section of pipe and also in hydrants, hydrant branches, and other appurtenances. They shall be attached by an adhesive, except for the tablets placed in hydrants and in the joints between the pipe sections. All the tablets within the main must be at the top of the main. If the tablets are fastened before the pipe section is placed in the trench, their position shall be marked on the section to assure that there will be no rotation.

2.2.2. Disinfection tablets shall be placed using Titebond Multi-Purpose Clear 100% Silicone, or approved equal food grade silicon. There shall be no adhesive on the tablet except on the broad side next to the surface to which the tablet is attached.

2.3. Filling and Contact:

2.3.1. When installation has been completed, the main shall be filled with water at a velocity of less than one (1) foot per second. Precautions shall be taken to ensure that air pockets are eliminated. This water shall remain in the pipe for at least twenty-four (24) hours. If the water temperature is less than 41°F, the water shall remain in the pipe for at least 48 hr. Valves shall be manipulated so that the strong chlorine solution in the line being treated will not flow back into the line supplying the water.

2.4. Dosage:

2.4.1. The number of hypochlorite tablets to be attached to the inside of each section of pipe shall be as shown in the following Table:

2.5. **Number of 5-g calcium hypochlorite tablets required for dose of 25 mg/L ***

	Length of Pipe Section (feet)				
Pipe Diameter	13 or less	18	20	30	40
(inches)	Number of 5-g Calcium Hypochlorite Tablets				
4	1	1	1	1	1
6	1	1	1	2	2
8	1	2	2	3	4
10	2	3	3	4	5
12	3	4	4	6	7
14	4	5	5	8	10
16	4	6	7	10	13
18	6	7	8	12	16
20	7	9	10	15	20
24	9	13	14	21	28

*Based on 3.25-g available chlorine per tablet; any portion of tablet rounded to next higher integer

Table based on Table 2 and Part 4.4.2.2 of AWWA C651-05. For other pipe sizes and lengths, refer to AWWA C651-05

2.6. Final Flushing:

2.6.1. After the applicable retention period, the heavily chlorinated water shall be flushed from the main until the chlorine concentration in the water leaving the main is no higher than that generally prevailing in the system, or less than one (1) mg/l. Contractor is responsible for disposal of chlorinated flushing water. No additional payment will be made for disposal of flushing water. Chlorine residual determination shall be made to ascertain that the heavily chlorinated water has been removed from the pipeline.

2.7. Bacteriologic Tests:

2.7.1. After final flushing and before the water main is placed in service, two consecutive sets of acceptable samples, taken 24 hours apart, shall be collected from the new main. At least one set of samples shall be collected from every 1,200 feet of new water main, plus one set from the end of the line and one set from each branch and submitted by Contractor to the Carson City Wastewater Reclamation Plant Laboratory for testing for bacteriologic quality and shall show the absence of coliform organisms.

2.8. Repetition of Procedure:

2.8.1. If the initial disinfection fails to produce satisfactory samples, disinfection shall be repeated until satisfactory samples have been obtained at Contractor's expense. The tablet method cannot be used in these subsequent disinfections. When the samples are satisfactory, the main may be placed in service.

END OF DOCUMENT 2016

TECHNICAL SPECIFICATIONS

DOCUMENT No. 2017 UNDERGROUND MARKING TAPE AND TRACER WIRE (6/16/2014)

1. General:

1.1. Underground marking tape shall be installed above all buried water pipelines.

2. Materials:

2.1. Tape shall be non-detectable polyethylene marking tape. Tape shall be blue in color and shall be three (3) inches wide by 4 mil thick and shall bear large printing denoting, "Buried Water Line Below".

2.2. Tracer wire shall be 12 gauge coated solid copper wire taped every 5 (five) feet to all water mains, water services, air releases etc. and shall remain continuous and conductive throughout all components of the water system. All splices, as from a service wire to a main wire, shall be soldered and wrapped with UL listed electrical tape.

3. Installation:

3.1. Underground marking tape shall be installed according to the manufacturer's instructions and as shown on the Drawings

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3.2. Marking tape shall be continuous from valve to valve. Tape shall be placed flat with the writing facing up and shall be laid twelve (12) inches above the top of pipe between the bedding and the trench backfill.

3.3. Tracer wire shall be installed as shown on the Drawings.

3.4. Tracer wire shall be continuous throughout the entire project, and shall be connected to any existing water tracer wire exposed through the course of the project.

END OF DOCUMENT 2017

TECHNICAL SPECIFICATIONS

Document No. 3001 STAKING, EXCAVATION, BACKFILLING AND COMPACTING FOR SEWER LINES (6/16/2014)

1. General:

1.1. Before any excavation on the project, Contractor shall notify all local utility companies and "Call Before You Dig" at 1-800-227-2600. Excavation shall include the removal of all materials or obstructions of any nature, the installation and removal of all sheeting and bracing and the control of water necessary to construct the work as shown. Excavation work shall be performed in a safe and proper manner with suitable precautions taken against hazards of every kind. Sheeting and shoring shall conform to the requirements of OSHA and Section 305.06 of the Standard Specifications. There is a significant likelihood that groundwater will be encountered during structure excavation. Contractor shall be prepared to install and maintain pumping equipment necessary to control groundwater during construction.

1.2. Pumping to maintain sewer service will be required. Contractor shall have on site, sufficient sized pumps and length of hose to accomplish this task. Contractor shall have a backup pump available at all times. Contractor shall be responsible for all cleanups, fines or other ramifications resulting from a spill.

1.3. Back fill during freezing weather shall not be done except by permission of Construction Manager or his representative. No backfill material shall be installed on frozen surfaces, nor shall frozen materials, snow or ice be placed in any backfill.

2. Reference Specifications and Standards:

2.1. Relative compaction or density, when hereinafter referred to, means the in-place dry density of the soil expressed as a percentage of the maximum dry density of the same soil as determined by the ASTM D1557 test procedure. The costs of site compaction or density testing shall be paid for by Carson City. The costs of all retests (from failed tests) shall be paid for by Contractor.

3. Staking Out the Work:

3.1. Contractor shall retain a Nevada Licensed Professional Land Surveyor, and the Surveyor or his Subordinates shall stake out the horizontal and vertical positions of all the Work. Contractor shall satisfy himself as to the accuracy of all measurements before constructing any permanent structure and shall not take advantage of any errors found on the Drawings. Where new construction connects to existing facilities, Contractor shall pothole and establish the exact locations and elevations prior to construction of the facilities.

3.2. Construction surveying, at a minimum, should include the location and depth for manholes, and intermediate stakes for line and grade of the sewer lines. It shall be Contractors responsibility to expose the existing sewer lines at the points of connection for the new lines and to maintain the depths of cover and slopes as indicated on the Drawings. It will also be Contractor's responsibility to pothole existing utilities and, after approval by Construction Manager, modify the grade as required to match or avoid existing utilities while maintaining the general slope of the pipe.

4. Trench Work:

4.1. Trench Configuration and Alignment:

4.2. Trenches shall be excavated to provide for the bedding as specified in subsection 10.1.5.1 Bedding.

4.3. The new pipeline shall be laid essentially as per the alignments and grades shown on the Drawings.

4.4. Trenches and other excavations shall have the minimum width which Contractor can effectively excavate and install the improvements. Excessive widths will not be permitted. Trenches shall have a minimum width of twenty four (24) inches greater than the outside diameter of the pipe to be installed. Deviations from this recommended width must be submitted to Construction Manager in writing for approval. The bottom of the trench shall be graded uniformly to provide a continuous bedding support under the pipe, and to allow the pipe to be laid to the grades and alignments shown in the Drawings.

5. Pipe Bedding:

5.1. The trench shall be over excavated to a depth of at least six (6) inches below the bottom of the pipe and backfilled to the required grade of the bottom of the pipe with bedding material. The pipe bedding shall be brought to optimum moisture content and compacted to not less than 90% relative density. The pipe bedding at the trench bottom shall have a flat or semicircular cross section. The bottom of the trench for all pipe shall be graded and prepared to provide a firm and uniform bearing surface throughout the entire length of each pipe section except for excavation required at joints. Pipe couplings shall not rest on the trench bottom and laying the pipe on mounds will not be allowed.

6. Bedding Through the Pipe Zone:

6.1. After center loading the pipe to prevent lateral movement, select granular material free from stones, clods, or other deleterious material shall be placed in the trench simultaneously on each side of the pipe for the full width of the trench in layers not to exceed eight (8) inches in depth. Each layer or lift shall be compacted to at least 90% of maximum density, evenly, on each side of the pipe throughout the pipe zone. The pipe zone is to extend from bottom of the pipe to twelve (12) inches above the top of the pipe and shall be backfilled with bedding material as specified herein.

7. Backfill Above the Pipe Zone:

7.1. From twelve (12) inches above the top of pipe to the top of the trench, if not in existing pavement, or bottom of the pavement structure, if in existing pavement, pipe backfill shall consist of material as specified in subsection 10.1.5.2 Backfill. No oil cake, bituminous pavement, concrete, rock or other lumpy material shall be used in the backfill. Backfill material shall be compacted to not less than 90% relative density. All trenches shall be backfilled after pipe fittings and appurtenances have been installed, inspected and approved. All trash, wood, large rocks, waste material and other objectionable debris shall be removed from the excavation prior to any material being placed in the trench.

7.2. Where existing underground pipes or conduits larger than three (3) inches in diameter cross the trench above the new work, the backfill from the bottom of the trench to the spring line of the intersecting pipe or conduit shall be Crushed Gravel Base material, Type 2, Class B, Aggregate Base conforming to the requirements of Section 200.01.03 of the Standard Specifications, compacted to 90% of relative density. The aggregate base material shall extend two (2) feet on either side of the intersecting pipe or conduit which will insure that the material will remain in place while other backfill is placed.

7.3. Backfill by jetting shall not be allowed. Backfill shall be densified by mechanical compaction.

8. Site Excavation:

8.1. The bottom of the excavation shall not be more than one-tenth (0.10) foot above or below the

lines and grades specified. If the elevation of structure excavation is not specified the excavation shall be not more than one-tenth (0.10) foot above or below the elevation specified for fill material below the structure. Cut slopes shall vary no more than five-tenths (0.5) foot from specified grade unless the excavation is in rock where the maximum variation may be two (2) feet. Unless otherwise specified, excavations shall extend a sufficient distance from walls and footings to allow for placing and removal of forms, installation of services, and for inspection, except where concrete is specified to be placed directly against excavated surfaces. Upon completion of excavation, the existing subgrade shall be compacted to a minimum of 90% relative density.

8.2. Should the excavation be carried below the lines and grades specified on the Drawings, or should the bottom of the excavation be disturbed because of Contractor's operations and require over-excavation and backfill, Contractor shall refill such excavated space to the proper elevation in accordance with the procedure specified for backfill.

9. Rock Excavation and Blasting:

9.1. No blasting will be permitted without the approval of Construction Manager. When blasting is permitted, it shall be done only by skilled operators and under the direction of a competent, properly licensed foreman.

9.2. Blasting will be permitted only when proper precautions are taken for the protection of persons, the work, and existing structures. Any damage done to persons, private property, the work, or existing structures shall be the responsibility of Contractor.

9.3. Blasting shall be done with explosives of such power and in such quantities and positions as not to make the excavation unduly large, or to shatter the faces of cuts which are to remain open. Excessive blasting or "overshooting" will not be permitted, and any material outside the authorized cross-section which may be shattered or loosened by blasting shall be removed and replaced with earth as herein specified, at Contractor's expense. Construction Manager shall have authority to require Contractor to discontinue any method of blasting which leads to "overshooting" or is dangerous to the public or destructive to property or to natural features.

9.4. Permits for blasting shall be obtained and paid for by Contractor.

10. Sheeting and Shoring:

10.1. Excavation for trenches shall be properly and substantially sheeted, braced, and shored as required by trench conditions. Sheeting, bracing, and shoring shall be designed and built to withstand all loads that might be caused by earth movement or pressure and shall be rigid, maintaining shape and position under all circumstances. Contractor(s design for all sheeting and shoring shall be signed and sealed by a licensed Nevada Civil or Structural Engineer and the drawings submitted to Construction Manager prior to its construction.

10.2. During backfilling, any shoring shall be carefully removed by Contractor in such a manner as will result in a minimum of caving, lateral movement, or flowing of the soil. On approval of Construction Manager, Contractor may leave shoring in place, but in such an event, no payment will be made by Carson City for such materials left in place. Where trench shoring is left in place, it shall not be braced against the pipe.

11. Materials:

11.1. Bedding:

11.1.1. Pipe bedding material shall conform to the requirements of Section 200.03.02, Class A

Backfill, of the Standard Specifications, except as noted on the drawings.

11.1.2. Bedding shall be placed in accordance with Section 305.08, Bedding, of the Standard Specifications.

11.2. Backfill:

11.2.1. Trench backfill shall conform to the requirements of Section 200.03.06, Class E Backfill, of the Standard Specifications, unless otherwise specified.

11.2.2. Trench backfill shall be placed and compacted in accordance with Section 305, Trench Excavation and Backfill, of the Standard Specifications.

11.2.3. Backfill for any structure shall be Crushed Gravel Base material, Type 2, Class B, Aggregate Base conforming to the requirements of Section 200.01.03 of the Standard Specifications.

11.2.4. If site excavated material meets the requirements for Class (E(Backfill but exceeds optimum moisture content, Contractor shall take whatever measures are necessary to dry the material to a compactable moisture content. No additional compensation shall be allowed for such measures. If site excavated material does not meet "Class E Backfill" requirements in accordance with the Standard Specifications, Contractor may be directed by Construction Manager to remove and dispose of the unsuitable material to an approved disposal location and import acceptable material.

12. Pavement Structure:

12.1. Defined as that section from the top of the backfill to the road wearing surface. This section shall consist of Crushed Gravel Base material, Type 2, Class B, Aggregate Base conforming to the requirements of Section 200.01.03 of the Standard Specifications, compacted to 95% relative density overlaid with asphalt concrete at a depth to match the contiguous pavement, but not less than that specified for roadway sections. Refer to the Permanent Pavement Patch Detail on the Drawings and, if applicable, also refer to the Patching Details for Work within NDOT Right-of Way.

13. Construction:

13.1. Maximum Length of Open Trench:

13.1.1. Except by permission of Construction Manager, the maximum length of open trench where prefabricated pipe is used shall be five hundred (500) feet, or the distance necessary to accommodate the amount of pipe installed in a single day, whichever is the greater.

13.2. Control of Water:

13.2.1. When water is encountered, Contractor shall furnish, install, maintain and operate all necessary machinery, appliances, and equipment to keep excavations free from water until the placing of the bedding material, laying and jointing of the pipe, pouring of concrete, and placing of the backfill material has been completed, inspected, and approved and all danger of flotation and other damages is removed. Groundwater pumped from the trench shall be disposed of in such a manner as will not cause injury to public or private property, or constitute a nuisance or menace to the public, and shall be subject to the prior approval of Construction Manager and all regulatory requirements of the State of Nevada. If well points are used for dewatering, they shall be removed or abandoned according to State of Nevada regulations.

13.3. Special Foundation Treatment:

13.3.1. Whenever the bottom of the trench is soft, yielding, or in the opinion of Construction Manager otherwise unsuitable as a foundation for the pipe, the unsuitable material shall be removed to a depth approved by Construction Manager and replaced with suitable material approved by Construction Manager. Payment of this work will be made only if the bottom of the trench has become unstable due to circumstances beyond the control of Contractor. Payment for this work will be made as specified in subsection 6.4 Modification Procedures of the General Conditions, unless otherwise provided for in these Contract documents.

13.4. Restoration of Roadway Surfaces:

13.4.1. All road shoulders and pavement which are broken or damaged due to Contractor's operations shall be reconstructed by Contractor at no additional cost to Carson City. Reconstruction shall be subject to the approval of Construction Manager.

13.5. Repairs Required by Trench Settlement:

13.5.1. If, at any time during a one (1) year period from the date of final acceptance of the project, there is any settlement of the trenches requiring repairs to be made, or should any other defect appear in the system due to negligence or carelessness on the part of Contractor, Carson City will notify Contractor to immediately make such repairs as may be deemed necessary at Contractor's expense.

14. Surplus Material:

14.1. All surplus material shall be disposed of offsite in accordance with applicable ordinances and environmental requirements. Contractor shall be responsible for ultimate disposal of surplus material.

END OF DOCUMENT 3001

TECHNICAL SPECIFICATIONS

Document No. 4005 CONCRETE CURB, GUTTER, WALKS, AND DRIVEWAYS (6/16/2014)

1. General:

1.1. This section includes any saw cutting and concrete removal, forming, pouring, and finishing curb, gutters, walks, and driveways.

1.2. Reference Specifications and Standards:

1.3. Unless otherwise specified herein, all work shall conform to the Standard Specifications.

2. Materials:

2.1. All Portland Cement Concrete, unless otherwise indicated, shall have synthetic fiber-reinforcement (at a minimum of 1 lb/CY) with a coarse aggregate gradation conforming to Size No. 67 in Section 200.05.03 of the Standard Specifications, and shall have a 1 to 4 inch slump and 4 to 7 percent entrained air. The minimum 28-day compressive strength shall be 4000 psi. Cement shall be Type II.

3. **Subgrade:**

3.1. The subgrade shall be prepared as specified in Subsection 302.02 of Standard Specifications.

3.2. All subgrade shall be compacted to a relative compaction of not less than ninety (90) percent for a minimum depth of six (6) inches, in accordance with test procedures set forth in ASTM D1557-70, Method C.

4. **Dimensions:**

4.1. Unless specified otherwise, the minimum thickness for concrete walks shall be four (4) inches. All other dimensions shall be as shown on the drawings.

5. **Drainage Outlets:**

5.1. Contractor will be required to provide suitable outlets through new curb for all existing building drains along the line of work.

5.2. The fully depressed curb opening at driveway entrances shall be one (1) inch above gutter flow line at the curb face. The top of the fully depressed portion of the curb shall be finished to a transverse 3/4 inch slope toward the gutter.

5.3. Where walk is to be constructed across driveways to commercial establishments, the thickness thereof shall be six (6) inches, unless otherwise specified on the drawings. At residential driveways, the thickness of the walk will be four (4) inches unless otherwise specified.

6. Forming:

6.1. All forming shall be done in accordance with Subsection 312.06 in Standard Specifications.

7. Slip Forms:

7.1. At the option of Contractor, and with the approval of Engineer, slip form equipment may be used for the construction of curb and gutter. The slip form equipment shall conform to the requirements in Subsection 312.07 in Standard Specifications.

8. Placement:

8.1. Concrete shall be placed for curb, gutters, walks, and driveways as specified in Subsection 312.08 in Standard Specifications.

9. Joints:

9.1. Joints in concrete curb, gutter, and walks shall be designated as expansion joints and weakened plane joints, and shall be constructed as specified by Subsection 312.09 in Standard Specifications.

10. Finishing and Curing:

10.1. Finish work and curing shall conform to specifications in Subsection 312.10 and 312.11 in Standard Specifications.

11. Defective Work:

11.1. Any new work found to be defective or damaged prior to its acceptance shall be repaired or replaced by Contractor at no expense to Carson City.

11.2. Removal of Existing Concrete Curb, Walk, Gutters, Cross Gutters, and Driveways:

11.3. Concrete shall be removed to neatly sawed edges with saw cuts made to a minimum depth of one and a half (1-1/2) inches. Concrete sidewalk or driveway to be removed shall be neatly sawed in straight lines either parallel to the curb or at right angles to the alignment of the sidewalk. Curb, gutters, sidewalks and driveways shall be removed to the nearest weakened plane joint or, if within four feet (4') of an expansion joint to that expansion joint. No section to be replaced shall be smaller than thirty (30) inches in either length or width. Curb and gutter shall be sawed to a depth of one and one half (1-1/2) inches on a neat line at right angles to the curb face.

11.4. All materials removed shall be hauled from the site, at Contractor's expense, to a recognized landfill site approved by Engineer, unless otherwise specified. The construction area shall be left with a neat and finished appearance.

11.5. Existing improvements, adjacent property, utilities and other facilities, and trees and plants that are not to be removed shall be protected from injury or damage resulting from Contractor's operations.

12. Backfilling and Cleanup:

12.1. Backfilling to the finished surface of the newly constructed improvement must be completed before acceptance of the work.

12.2. Upon completion of the work, the surface of the concrete shall be thoroughly cleaned and the site left in a neat and orderly condition.

END OF DOCUMENT 4005

TECHNICAL SPECIFICATIONS

Document No. 4007 ASPHALT CONCRETE PAVEMENT (6/16/2014)

1. General:

1.1. Work under this section includes mixing, delivery, placement, trimming and compaction of plantmix asphalt concrete on a prepared aggregate base including tack coats and fog seal.

1.2. All work shall be performed in accordance with Sections 316, Tack Coat; 317, Seal coats; and 320, Plantmix Bituminous Pavement, of the Standard Specifications, except as modified herein.

1.3. A tack coat of SS-1h asphalt emulsion, diluted 50-50 with water, shall be applied to all vertical asphalt or concrete join surfaces prior to placement of plantmix bituminous pavement. The application rate shall be 0.10 to 0.15 gallons per square yard.

1.4. When more than one course of asphalt concrete is placed, the surface of the first course shall be treated with a tack coat of SS-1h asphalt emulsion, diluted 50-50 with water, applied at the rate of 0.05 to 0.10 gallons per square yard.

1.5. Residential roadways shall use type 3 aggregate, collectors and artierial shall use type 2 aggregate per Section 200.02.03, Plantmix and Roadmix Aggregate, of the Standard Specifications. Asphalt cement material shall be PG 64-22 unless polymer additive is required then PG 64-28 shall be used. The asphalt concrete shall be compacted to not less than 96% of its Marshall maximum density when compacted with 50 blows per side.

1.6. A fog seal coat of SS-1h asphalt emulsion, diluted 50-50 with water, shall be applied to all completed asphalt surfaces including milled asphalt surface prior to the asphalt concrete overlay. The only exception shall be top lift's containing polymer. The fog seal shall be applied at the rate of 0.06-0.08 gallons per square yard. Application shall not commence until at least twenty-four (24) hours after final rolling. The pavement temperature shall be at least 70 degrees F. at the time of application, and the ambient temperature shall be at least 50 degrees F.

1.7. Recycled Aggregate Base will not be allowed in any public roadway.

2. Construction:

2.1. The following shall be in addition to the requirements contained in Section 320.03.03, Pavers, of the Standard Specifications.

2.1.1. Pavers placing the final lift of the plant mix bituminous pavement for any uniform roadway section shall be equipped with an automatic control system capable of operating in conjunction with either a ski type device of not less than 30 feet in length or a taut wire set to grade.

2.1.2. Contractor shall furnish all equipment required and shall install all stakes and wire required for the wire system. The automatic system shall be used for construction of the final lift.

END OF DOCUMENT 4007

TECHNICAL SPECIFICATIONS

WATERBORNE PAVEMENT STRIPING

A. DESCRIPTION

1. General. This work consists of applying permanent pavement striping and markings on the completed pavement. Use rapid dry waterborne traffic paint materials for the waterborne pavement striping item shown in the proposal.

B. CONSTRUCTION

1. General. Perform engineering for the location of the pavement striping according to the plans, Special Provisions, these specifications, and as directed. The location of striping shall be the striping pattern depicted on the plan sheets.

Place markings in proper alignment. All striping and pavement markings shall be white except the handicap stall marking which shall be blue. Remove and replace markings not placed in proper alignment or pattern by approved methods.

Protect the pavement striping and markings from public traffic until dry.

Painted pavement striping shall be four (4) inches wide unless otherwise noted.

2. Striping Equipment. Use equipment with a system capable of spraying both yellow and white paint, mounted on a truck of sufficient size and stability, and having an adequate power source to produce lines of uniform dimension and prevent application failure. Use equipment capable of placing stripes on the left and right sides and of placing two lines simultaneously with either line in a solid or intermittent pattern in yellow or white, and of applying glass beads at the proper rate. All guns must be in full view of operators at all times. Provide equipment with a metering device to register the accumulated installed footage for each gun, each day. Include at least one operator in each vehicle who is a technical expert in equipment operations and application techniques. Use equipment designed so that the pressure gauges for each pump are constantly visible to the operator at all times during its operation so that any fluctuation and pressure difference can be monitored immediately. Equip each paint tank with a mechanical agitator.

For rapid dry waterborne traffic paint materials use only equipment designed for water based paints.

After opening containers of rapid dry waterborne traffic paint, maintain a thin layer of water on the surface of the paint during storage to prevent skinning.

3. Application. Rapid Dry Waterborne Traffic Paint. Apply paint to an approved clean and dry surface. Apply by a single application with a machine capable of dispensing beads immediately after paint is applied. Do not use thinner unless otherwise approved.

Do not apply paint when the ambient air temperature or the pavement temperature is below 7<C (45<F).

Apply Nev.Type II 6050 waterborne paint markings to obtain a twenty five (25) mils minimum wet film thickness, measured without drop-on glass beads.

Produce markings of uniform thickness and with uniform distribution of glass beads throughout the line width. The width of lines shall be as specified with tolerance of ∀ one quarter (3) inch for four (4) inch lines and one half (2) inch for wider lines. Produce markings with sharp edges and cutoff at the ends.

4. Final Acceptance. Final acceptance will be based on satisfactory compliance with these specifications. Work will have a six month warranty.

END OF DOCUMENT

TECHNICAL SPECIFICATIONS

SITE IMPROVEMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide site improvements and furnishings.

1.02 SUBMITTALS

A. Submit for approval shop drawings, product data, warranty, test reports.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Regulations: ADAAG and local accessibility requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Provide units specifically designed for exterior exposure and intended use: Verify location with owner.

1. Bicycle Racks:
   a. Manufacturer: AAA Ribbon Rack Co., Division of Brandir International, Inc., 521 Fifth Avenue, 17th Floor, New York, NY 10175-0038, 1 800 849-3488.
   b. Type: RB 05, Inground Anchor Mount
   c. Heavy-duty steel pipe, hot dip galvanized after fabrication.

2. Bollards: Concrete filled steel bollards. Verify location with owner.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

B. Restore damaged finishes and test for proper function. Clean and protect work from damage.

END OF SECTION

TECHNICAL SPECIFICATIONS

STEEL AND CHAIN LINK FENCES, GATES & OPERATORS

PART 1 - GENERAL

1.13 RELATED DOCUMENTS

B. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

1.14 SUMMARY

A. Provide chain link fencing, gates and operators as noted on drawings.

B. Provide Steel fencing, gates and operators as noted on drawings.

1.15 REFERENCES

A. Chain Link Fence Manufacturers Institute (CLFMI) - Product Manual.

B. ASTM F567 - Standard Practice for Installation of Chain Link Fence.

C. Underwriters Laboratories, Inc. (UL) 325 - Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.16 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

1.17 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

1.18 WARRANTY

A. Controller: Products shall include a factory warranty that equipment is free from defects in design, material, manufacturing and operation. Factory warranty period shall be for five (5) years parts and workmanship; 60-months from date of shipment. Installing contractor shall guarantee the equipment, wire and installation for 12-months from date of acceptance.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Steel Chain-Link Fence: Sections of existing chain-link fence to be dismantled and salvaged. See drawings for extent of salvage and reuse. Replace any frames, fittings, mesh or accessories as required. Match existing.

B. Man Gate: Provide man gate as shown. Match existing chain link fencing in height and materials.

C. Vehicular Slide Gate: Provide 6'x26' wrought iron sliding gate.

D. Operator: 9150 series vehicular slide gate operator system, manufactured by Door King, Inc., Inglewood, California.

E. Steel Fence Systems:

1. Steel Tubing: ASTM A 500 or A 501. "Guardian Style" on East side of building and "Majestic Style" with puppy panels on west side of building .
2. Steel Tubing: ASTM A 500 or A 501. Provided welded gate frame for all Guardian, Majestic, and vinyl fence gates. See AS101 for locations. Match construction of gate frames with the existing Carson City Corporation Yard Main Entrance. Provide attachment plate that coordinates with hardware noted on A601.
3. Steel Plates, Shapes and Bars: ASTM A 36.

4. Finish: Powder Coat – Black. Verify with owner

2.02 OPERATOR EQUIPMENT

A. Model 9150 Vehicular Slide Gate Operator
   1. Dimensions: 24 inches high, 15 inches wide, 16.5 inches deep.
   2. Horsepower:
      1 HP: 1500 lb maximum gate weight, 1300 lb if convenience open option is installed. 45-ft maximum gate length, approximately 1-ft/sec gate speed.
      115 VAC
   3. Model 1838 Access Control System - Controls three access points.
   4. Model 1850-051 Weigand Keypad - Controls access at gate operator.
   5. Model 1815-305 DK Prox Proximity Card Reader System - Controls employee access at gate operator.
   6. Fire Access Device - Knox Box (P/N 1401-080) or check with AHJ for correct device.
   7. Secondary Entrapment Prevention - Non-contact sensors (photo-cells) and contact sensors.
   8. Accessories
      a. Vehicle Loop Detectors
      b. Chain tray kit available in 10-ft sections.
      c. Red/Green traffic signal
      d. Environmental Control
      e. Drive Chain
      f. Post Mount Base Plate
      g. Convenience open (battery backup) drive system.
   9. A complete operational system shall be provided.

PART 3 – EXECUTION

3.01 STEEL / CHAIN LINK FENCE AND GATE INSTALLATION

A. Comply with ASTM F567 - Standard Practice for Installation of Chain Link Fence.
B. Install posts to depth to avoid frost heave. Stretch fabric taut, without sag.
C. Swing Gates:
   1. Install in accordance with ASTM F567, with gates plumb in closed position and having 3 inch bottom clearance, grade permitting.
   2. Maximum hinge and latch offset opening space from gate frame to post: 3 inches in closed position.
D. Horizontal Slide Gates:
   1. Install in accordance with manufacturer's instructions and ASTM F567 with gates plumb in closed position and having 3 inch bottom clearance, grade permitting.
   2. Install roller guards and guide posts on external roller cantilever slide gates in compliance with ASTM F1184.
   3. Install electrically operated gates and accessories in accordance with ASTM F2200 and UL 325.

3.02 OPERATOR INSTALLATION

A. Model 9150 shall be post or pad mounted, as required.
   1. Post mount - Mounting posts shall be welded to base plate and mounted in concrete, firmly secured, plumb and level.
   2. Pad mount. Mounted directly to a concrete pad, firmly secured, plumb and level.
B. Wiring shall be uniform and in accordance with national electric codes and manufacturer's instructions. Run Cat 6 wiring from pedestal back to interior Server Closet.
C. All splices shall be in easily accessible junction boxes or on terminal boards.
D. All cable runs in all junction boxes shall be tagged and identified.

E. Coordinate all work with other effected trades and contractors.

F. System shall be turned on and adjustment made to meet requirements of specifications and on-site conditions. System shall function as specified. System shall be tested in presence of owner's representative.

G. Installation contractor shall conduct up to (1) hour of instruction in use and operation of the system to designated owner representatives, within (30) days of acceptance.

H. Installation contractor shall conduct up to (1) hour of technical training, in troubleshooting and service of the system, to designated owner representatives within (90) days of system acceptance.

I. Contractor shall provide owner with (2) copies of standard factory prepared operation, installation and maintenance manuals. Manuals shall include typical wiring diagrams.

J. Contractor shall provide owner with (2) copies of any risers, layouts, and special wiring diagrams showing any changes to standard drawings, if required on project.

END OF SECTION

TECHNICAL SPECIFICATIONS

VINYL FENCE

PART 1 - GENERAL

3.03 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

3.04 SUMMARY

A. Provide vinyl fencing and gates manufactured with mono-extruded profiles from 100 percent virgin PVC components.

3.05 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, color charts, actual finish color samples and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

3.06 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

3.07 WARRANTY

A. Limited lifetime warranty. Include warranty against color change due to normal atmospheric conditions that exceed the limits established by ASTM D 4726.

PART 2 – PRODUCTS

4.01 MANUFACTURER

A. Basis of Design Product: Barrette Outdoor Living, Linden Pro Series – Veranda.

B. Substitutions: Under provisions of Division 01.

4.02 MATERIALS

A. Vinyl tongue and groove boards with 7" top and bottom rails and corresponding posts. Provide pyramid post caps.

B. Provide manufacturer's standard brackets, fasteners, PVC grommets, and other accessories required to complete installation.

PART 3 – EXECUTION

5.01 INSTALLATION

A. Examine earthwork where fencing is to be installed. Verify that soil is either firm undisturbed or properly compacted at post placement. Coordinate with Contractor to correct unsatisfactory conditions.

B. Install specified fence components and accessories per manufacturers installation guidelines and requirements

C. Restore or replace damaged components. Clean and protect work from damage.

END OF SECTION

TECHNICAL SPECIFICATIONS

List of Specifications related to the building.

3300 CAST IN PLACE CONCRETE
4200-UNIT MASONRY
6100 ROUGH CARPENTRY
6132 TECTUM CEILING PANEL
6192 WOOD TRUSSES
6201 EXTERIOR FINISH CARPENTRY
6402 INTERIOR ARCHITECTURAL WOODWORK
7050 WEATHER BARRIERS
7210 BUILDING INSULATION
7411 MANUFACTURED ROOF PANELS
7460 FIBER-CEMENT BOARD SIDING
7530 SINGLE-PLY MEMBRANE ROOFING
7600 FLASHING AND SHEET METAL
7720 ROOF ACCESSORIES
7901 JOINT SEALANTS
8111 STEEL DOORS AND FRAMES
8211 WOOD & PLASTIC DOORS
8360 SECTIONAL OVERHEAD DOORS
8422 SLIDING AUTOMATIC ENTRANCES
8511 VINYL WINDOWS
8520 ALUMINUM INTERIOR WINDOWS
8710 DOOR HARDWARE
8711 POCKET DOOR HARDWARE
8800 GLAZING
9250 - GYPSUM BOARD ASSEMBLIES
9300-TILE
9512 - ACOUSTICAL TILE CEILINGS
9678 - RESILIENT WALL BASE AND ACCESSORIES
9706 – DECOATIVE FLAKE EPOXY FLOOR FINISH SYSTEM
9900 - PAINTING
10000-BUILDERS SPECIALTIES
15010 - BASIC MECHANICAL REQUIREMENTS
15050 - BASIC MECHANICAL MATERIALS AND METHODS
15250 - MECHANICAL INSULATION
15300 - FIRE PROTECTION
15400 - PLUMBING
15485 - MEDICAL GAS PIPING SYSTEMS
15880 - AIR DISTRIBUTION
15990 - TESTING, ADJUSTING AND BALANCING
16010 – GENERAL PROVISIONS
16110 - RACEWAYS
16120 - WIRES AND CABLES
16130 - OUTLET BOXES
16133 - CABINETS
16140 - WIRING DEVICES
16150 - MOTORS
16155 - MOTOR STARTERS
16160 - PANELBOARDS
16170 - MOTOR AND CIRCUIT DISCONNECTS
16181 - FUSES
16450 - GROUNDING
16500 - LIGHTING EQUIPMENT
16501 - LAMPS
16511 - LED FIXTURES
16722 - FIRE ALARM SYSTEM
16740 - TELEPHONE SYSTEM

SECTION 03300 – CAST IN PLACE CONCRETE

PART 1 - GENERAL

5.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

5.03 SUMMARY

A. Section includes:
   1. Cast-in-place concrete, reinforcing and accessories.
   2. Foundation, footings and stem walls.
   3. Building slabs on grade.
   4. Columns and beams.

B. Coordinate with structural engineering specifications, both written and those included on drawings. Submit questions in writing to architect for clarification of conflicting information. Structural drawings and specifications supersede architectural specifications regarding concrete.

C. Vapor barrier to be installed under entire building slab, including the exterior dog run slabs. Per Geotechnical Report, note the following: One-inch (minimum) layers of clean sand should be provided above and below the vapor barrier material so as to protect it from puncture or damage. The vapor barrier should extend to the edges of the slab, and should be sealed at all seams and penetrations. Care should be taken to avoid any disturbance or rupture to the water-proofing measures throughout the construction process.

5.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data, color charts, and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections and relationship with adjacent construction. Coordinate with structural engineering drawings for shop drawing submittal requirements.

C. Mix Design: Submit for approval mix design proposed for use stamped by a qualified engineer licensed in the jurisdiction of the project.

D. Manufacturer's literature for under-slab vapor barrier, tape and perimeter / edge seal.

5.05 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

B. Testing: Employ an independent testing agency acceptable to Owner to design concrete mixes and to perform material evaluation tests. Provide 7 and 28 day cylinder tests. Comply with ASTM C 143, C 173, C 31 and C39.

C. Standards:
   1. ACI 301, Specifications for structural Concrete for Buildings.
   2. ACI 318, Building Code Requirements for Reinforced Concrete and CRSI Manual of Standard Practice.
   3. Concrete Reinforcing Steel Institute Manual of Practice; Publication 63 - Recommended Practice for Placing Reinforcing Bars and Publication 65 - Recommended Practice for Placing Bar Supports, Specifications and Nomenclature.

D. Floor Flatness and Levelness Tolerances:

1. Subfloors under materials such as concrete toppings, ceramic tile and sand bed terrazzo: ACI 302.1R and ASTM E 1155, floor flatness (Ff) of 15, floor levelness (Fl) of 13.
2. Subfloors under materials such as vinyl tile, epoxy toppings, paint and carpet: ACI 302.1R and ASTM E 1155, floor flatness (Ff) of 20, floor levelness (Fl) of 17.

5.06 PROJECT CONDITIONS

A. Cold Weather Placement - Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures. Comply with ACI 306R and following requirements:
   1. Air temperature at or expected to fall below 40 degrees F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F and not more than 80 degrees F 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.

B. Hot Weather Placement - Place concrete in accordance with ACI 305R and following requirements:
   1. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F. Use chilled mixing water or chopped ice if water equivalent of ice is calculated in total amount of mixing water.
   2. If required, cover reinforcing steel with water soaked burlap so that steel temperature will not exceed ambient air temperature.
   3. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.
   4. Use water-reducing retarding admixture when required by high temperatures, low humidity, or other adverse placing conditions.

5.07 DELIVERY AND STORAGE

A. Mix and deliver concrete to project ready mixed in accordance with ASTM C94.

B. Schedule delivery so that pours will not be interrupted for over 15 minutes.

C. Place concrete on site within 90 minutes after proportioning materials at batch plant.

PART 2 - PRODUCTS

6.01 MANUFACTURERS

A. Acceptable Manufacturers – Concrete Chemicals
   1. BASF Corporation.
   2. Dayton Superior.
   3. Nox-Crete Products Group.

B. Substitutions: Under provisions of Division 01.

6.02 MATERIALS

A. Concrete Design Mixes: As scheduled on structural engineering drawings and specifications. ASTM C 94, 28 day compressive strength suitable for project requirements and site conditions. Proportions: In accordance with ACI 301. Concrete slab mix water-cement ratio not to exceed 0.50.

B. Concrete Materials: ASTM C 150, Type I, Portland cement; potable water.
   1. Normal weight aggregates, ASTM C 33. Provide aggregates from a single source for exposed concrete.
   2. Light weight aggregates, ASTM C 33. Provide aggregates from a single source for exposed concrete.
   3. Portland Cement: ASTM C 150, Type I or II unless otherwise acceptable to Architect. Use one brand of cement throughout project, unless otherwise acceptable to Architect.
   4. Fly Ash: ASTM C 618, Type F. Use of fly ash not to exceed 25 percent of cement content by weight.

5. Concrete Admixtures: Containing less than 0.1 percent chloride ions.
   a. Water-Reducing Admixture: ASTM C 494, Type A, for placement and workability.
   b. High-Range Water-Reducing Admixture, Super Plasticizer: ASTM C 494, Type F or G for placement and workability.
   c. Water-Reducing, Non-Chloride Accelerating Admixture: ASTM C 494, Type E for placement and workability.
   d. Water-Reducing, Retarding Admixture: ASTM C 494, Type D for placement and workability.

C. Formwork: Plywood or metal panel formwork sufficient for structural and visual requirements. Conform to ACI 301 and 347.

D. Cast-in-place Concrete Reinforcing:
   1. Reinforcing Bars: ASTM A615/A615M, deformed billet steel, Grade as indicated on Drawings and ASTM A 767, Class II, galvanized.
   2. Steel Wire: ASTM A 82.
   3. Steel Wire Fabric: ASTM A 497, welded, deformed.
   4. Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devised for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise acceptable.
   5. For slab-on-grade, use supports with sand plates or horizontal runners where base material will not support chairs.

E. Accessories:
   1. Reglets: Galvanized sheet steel reglets, minimum 26 gage (0.18 inch).
   2. Waterstops: Rubber, PVC or self-expanding butyl/bentonite waterstops.
   3. Epoxy Adhesive: ASTM C 881, two-component material.

F. Vapor Barrier: As manufactured by Stego Industries LLC, 3926 E. Kent Ave., Gilbert, AZ 85296; (949) 726-2021; www.stegoindustries.com.
   1. 15 mil virgin polyolefin membrane, manufactured with highest grade, virgin, polyolefin resins.
   2. Permeance as tested after mandatory conditioning (ASTM E1745 Section 7.1 and sub-paragraphs 7.1.2 – 7.1.5): less than 0.01 Perms [grains/ (ft^2 hr. in-Hg)].
   3. Strength: Class A (ASTM E 1745)
   4. All tape, mastic and other accessories to be by same manufacturer of vapor barrier.
   5. Alternate: Vaporguard by Reef Industries (713) 507-4250.
   6. Vapor barrier to be installed under entire building slab, including the exterior dog run slabs.
   7. Per Geotechnical Report, note the following: One-inch (minimum) layers of clean sand should be provided above and below the vapor barrier material so as to protect it from puncture or damage. The vapor barrier should extend to the edges of the slab, and should be sealed at all seams and penetrations. Care should be taken to avoid any disturbance or rupture to the water-proofing measures throughout the construction process.

G. Concrete Hardener/Sealer: Creteseal Concrete Waterproofing Products, Inc., CS2000.
   1. Performance Requirements:
      a. ASTM C 309 Test for Liquid membrane forming curing compounds.
      b. ASTM C 1315-95 Liquid membrane forming compounds having properties for curing and sealing concrete.
      c. ASTM C 67 Section 10 Efflorescence
      d. ASTM C 666 Freeze-Thaw Resistance & Resistance to Salt Attack.

      RFCI Specification ADH-1 Type 3 test specification design by Resilient Flooring Institute for compatibility with resilient flooring.
   2. Warranty: Creteseal shall warrant the floor covering system against failure due to negative-side moisture migration or moisture-born contaminates for a period of ten (10) years from the date of original installation.

H. Grout: Concrete grout shall be non-shrinking with ultimate compressive strength at 28 days to

be equal to 4000 PSI minimum, unless noted otherwise.

I. Finishes:
   1. Finishes for surfaces to be exposed to view or covered with resilient flooring, carpet tile or other thin finish system: Trowel finish.
   2. Finishes for surfaces to receive thin-set ceramic or quarry tile: Trowel and fine broom finish.
   3. Finish for exterior concrete platforms, steps ramps and sloped walls: Non-slip broom finish.
   4. Finish for interior exposed concrete stairs and ramps: Trowel finish, then uniformly trowel 25 lbs/100sf of damp non-slip aggregate into surface. Cure, rub lightly to expose aggregate.
   5. Finish for horizontal surfaces to receive concrete or mortar setting bed: Scratch finish.
   6. Finish for vertical surfaces exposed to view: Smooth rubbed finish.
   7. Finish for vertical surfaces not exposed to view: As-cast form finish.

PART 3 - EXECUTION

7.01 INSTALLATION

A. Comply with ASTM C 94. Do not change mix designs without approval. Calcium chloride admixtures are not permitted.

B. Contractor shall coordinate placement of all openings, conduits, sleeves, bolts, embeds and similar items located in concrete forms. Contractor to coordinate all trades, including mechanical, electrical and plumbing. Remove all debris from concrete forms prior to concrete placement. Review all drawings and specifications prior to concrete placement.

C. Contractor shall coordinate under-slab vapor barrier installation with all slab penetrations and edge conditions prior to slab pour.

D. Depth of saw-cut joints to be ¼ of slab thickness.

E. Chamfer exposed edges and corners to provide straight lines.

F. Tolerance. Plus or minus 1/8” in 10’ for grade, alignment and straightness.

G. Construction Joints: Use keyways, continue reinforcement through joint.

H. Expansion Joints: For exterior work located 30’ on center at approved locations. Provide smooth dowels across joint which permit 1-inch horizontal movement and no vertical shear movement.

I. Isolation Joints: Provide between slabs and vertical elements such as columns and structural walls.

J. Control Joints: Provide sawn or tooled joints or removable insert strips; depth equal to ¼ slab thickness. Spacing as required and approved.

K. Wall Finishes: As-cast and patched for concealed work; rubbed smooth, filled and cement paste coated for exposed work.

L. Slab Finishes: Obtain sample approval before beginning work.
   1. Hardener Finish: For exposed interior concrete floors. Follow manufacturer’s directions.

M. Cure concrete in accordance with ACI 308: and protect work. Report defective work in writing.

N. Vapor Barrier Installation: Installation shall be in accordance with manufacturer’s instructions and ASTM E 1643.
   1. Install as indicated in the Geotechnical Report.
   2. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement and face laps away from the expected direction of the placement whenever possible.
   3. Extend vapor barrier over footings and grade beams to a distance acceptable to the structural engineer or stop at impediments such as dowels and water-stops.
   4. Seal vapor barrier to slab perimeter/edge using Stego Crete Claw and remove dirt, debris, and mud from Crete Claw prior to concrete placement OR seal vapor barrier to footing/grade beam with double sided tape, termination bar, or both.

a. Overlap joints 6 inches and seal with manufacturer's tape.
b. Apply tape/Crete Claw to a clean and dry vapor barrier.
c. Seal all penetrations (including pipes) per manufacturer's instructions.
d. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
e. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all sides with tape.
f. Install over tamped earth base.

5. Overlap all seams a minimum of 6-inches and tape using certified manufacturer's tape. Seal all penetrations (including pipes) per manufacturer's instructions. No penetration of the Vapor Barrier is allowed except for reinforcing steel.

7.02 FIELD QUALITY CONTROL

A. Refer to Structural Drawings for special inspection notes and tables.

END OF SECTION

SECTION 04200 - UNIT MASONRY

PART 1 – GENERAL

7.03 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

7.04 SUMMARY

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

B. Coordinate with structural engineering specifications, both written and those included on drawings. Submit questions in writing to architect for clarification of conflicting information.

C. Section includes:
   1. Concrete masonry unit bearing walls.
   2. Concrete masonry unit non-bearing partitions.
   3. Freestanding site masonry walls.
   4. Masonry mortar and grout

D. Coordinate with structural engineering specifications, both written and those included on drawings. Submit questions in writing to architect for clarification of conflicting information. Structural drawings and specifications supersede architectural specifications regarding concrete.

7.05 SUBMITTALS

A. Product Data: Submit manufacturer's product data, samples, color charts, and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections and relationship with adjacent construction. Coordinate with structural engineering drawings for shop drawing submittal requirements.

7.06 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Testing: Independent Testing Laboratory.

C. ASTM International (ASTM)
   1. A951 - Standard Specification for Masonry Joint Reinforcement.
   2. C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile.
   3. C90 - Standard Specification for Hollow Loadbearing Concrete Masonry Units.
   4. C129 - Standard Specification for Hollow Nonloadbearing Concrete Masonry Units.
   5. C216 - Standard Specification for Facing Brick
   6. C652 - Standard Specification for Hollow Brick
   7. C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Concrete.
   8. C1019 - Standard Test Method for Sampling and Testing Grout.

D. Perform Work in accordance with standards of acceptable practice as defined by The Masonry Society, American Concrete Institute, National Concrete Masonry Association, Brick Industry Association, and the Structural Engineering Institute of the American Society of Civil Engineers.
   1. American Concrete Institute (ACI): ACI 530-13 and ACI 530-13.1
   2. The Masonry Society (TMS) 402 - Building Code for Masonry Structures and 602 - Specification for Masonry Structures.

E. Comply with PCA Recommended Practices for Laying Concrete Block, Brick Institute of America (BIA) Tech Notes, and NCMA, including ties, reinforcing, expansion and control joint recommendations.

7.07 PROJECT CONDITIONS

A. Do not apply uniform floor or roof loading for at least 12 hours after building masonry walls or columns. Do not apply concentrated loads for at least 3 days after building masonry walls or columns.

B. Environmental Requirements:
   1. Hot weather requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.
   2. Cold weather requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

C. Wall Protection:
   1. During erection, cover tops of partially completed walls with strong waterproof membrane at end of each day or work stoppage.
   2. Extend cover minimum of 24 inches down both sides; hold securely in place.

7.08 DELIVERY AND STORAGE

A. Deliver products to site, store and protect per manufacture instructions.

B. Store mortar and other moisture-sensitive materials in protected enclosures; avoid exposure to moisture.

WARRANTY

PART 2 - PRODUCTS

8.01 MANUFACTURERS

A. Basis of Design: Utility Block Company, Inc. Color – Whitesands, 910.
   1. 8" Plain Face CMU, dimensions of 8x8x16 inches.
   2. 8" Split Face CMU, score at 8”, dimensions of 8x8x16 inches.
   3. 6" Plain Face CMU, dimensions of 8x6x16 inches.

B. Substitutions: Under provisions of Division 01. Basalite is preapproved equal.

8.02 MASONRY UNITS

A. Concrete Masonry Units: Obtain masonry units from one manufacturer of uniform texture and color for each kind required for each continuous area and visually related areas. Provide units complying with standards referenced and requirements indicated.
   1. ASTM C90, hollow or solid as specified, load bearing type, normal weight. Type I, Grade N, 1350 PSI @ 28 days.
   2. ASTM C129, hollow or solid as specified, non-load bearing type, normal weight.
   3. Size: Manufactured to dimensions 3/8 inch less than nominal dimensions. See drawings/keynotes for sizes.
   4. Special Shapes: Provide where required for lintels, sills, corners, pilasters, jambs, caps, sash, control joints, bullnose, headers, bonding and other special conditions.
   5. Exposed Faces: Provide manufacturer’s standard colors and texture as indicated in the drawings. Submit actual CMU color samples from a complete line of colors for Architect’s selection.
   6. Integral Water Repellent: Provide units made with integral water repellent for all exposed units and all exterior wall units regardless of exposure. Units to be manufactured with liquid polymeric, integral water-repellent admixture that does not reduce flexural bond strength. Units made with integral water repellent, when tested according to ASTM E 514 as a wall assembly made with mortar containing integral water-repellent manufacturer's mortar additive, with test period extended to 24 hours, shall show no visible water or leaks on the back of test specimen.

8.03 MORTAR AND GROUT MATERIALS

A. Mortar and Grout
   1. Mortar Mix: ASTM C 270, Type S, with a compressive strength of 1,800 psi @ 28 days, for reinforced masonry, masonry below grade and masonry in contact with earth and ASTM C 270, Type N, for above-grade loadbearing and nonloadbearing walls and parapet walls and for interior loadbearing and nonloadbearing partitions.
   2. Mortar and Grout Materials: Portland cement, ASTM C 150, Type I typical, Type III may be used for cold weather construction.
   3. Mortar Aggregate: Natural color, ASTM C 144.
   4. Grout Aggregate: ASTM C 404.
   5. Hydrated Lime: ASTM C 207, Type S.
   6. Color: Natural color.
   7. Water: Clean and potable.
   8. Pigmented Mortar: Use premixed colored masonry cements as selected by Architect.

B. Water Repellent for Masonry Mortar: Provide at all exposed masonry units and exterior wall masonry units. Polymeric water-repellent admixture added during masonry mortar mixing. Liquid water-repellent mortar admixture intended for use with concrete masonry units, containing integral water repellent by same manufacturer.

C. Mortar Mixes:
   1. Do not lower the freezing point of mortar by use of admixtures or anti-freeze agents. Do not use calcium chloride in mortar or grout.
   2. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for types of mortar required, unless otherwise indicated. Limit cementitious materials in mortar to Portland cement-lime.
   3. Grout for Unit Masonry: Comply with ASTM C476 fine or coarse grout per structural engineering specifications. Minimum compressive strength of 2,500 psi @ 28 days. Slump 7-8 inches.

8.04 MASONRY ACCESSORIES

A. Refer to structural engineering drawings and specifications for relevant accessories specification and installation information.
   1. Horizontal Joint Reinforcement: ASTM A82 and ASTM A951 hot dip galvanized steel wire. Provide welded wire units prefabricated in straight lengths of not less than 10', with matching corner (“L”) and intersecting (“T”) units. Install with deformed continuous side rods and plain cross rods, into units with widths of approximately 2" less than nominal width of walls and partitions as required to position side rods for full embedment in mortar coverage of not less than 5/8" on joint faces exposed to exterior, and not less than 1/2" elsewhere. Provide truss type or ladder type with cross rods spaced not more than 16" oc. vertically unless noted otherwise.
   2. Reinforce masonry openings greater than 1'-0" wide, with horizontal joint reinforcing placed in 2 horizontal joints approximately 8" apart, both immediately above lintels and below sills. Extend reinforcing a minimum of 2'-0" beyond jambs of the opening, bridging control joints where provided.
   3. Anchors, Ties, Fasteners:
      a. Strap Anchors: Bent steel shape, hot dip galvanized, ASTM A153/A153M, Grade B2 finish.
      b. Veneer Ties: Corrugated formed sheet metal, hot dip galvanized, ASTM A153/A153M, B2 finish.
      c. Veneer Ties: Formed steel wire, standard 14 gage, hot dip galvanized, ASTM A153/A153M, B2 finish, minimum 2 inch embedment into masonry.
      d. Dovetail Anchors: Bent steel strap, hot dip galvanized, ASTM A153/A153M, B2 finish.
      e. Fasteners: Hot-dip galvanized steel, minimum 3/4 inch penetration into substrate.

B. Vertical Reinforcing: ASTM A615/A615M, deformed billet steel, Grade 60. Provide hot-dip galvanized reinforcing bar positioners designed for number of bars indicated, unless noted otherwise.

C. Non-Metallic Expansion Joint Strips: Premolded filler strips complying with ASTM D 1056,

Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene PVC.

D. Weeps: Insect resistant weep and vent barrier, color to be selected.
   1. Hohmann & Barnard, Inc.; #343W - Wilko Weep Hole.
   2. Blok-Lok Limited; Cell-Vent.
   3. Mortar Net USA, Ltd.; Mortar Net Weep Vents.
   4. Polyguard TERM Weep and Vent Barrier

E. Bond Breaker Strips: 15-lb. Asphalt roofing felt complying with ASTM D 226, or 15-lb., coal-tar roofing felt complying with ASTM C 227.

F. Preformed Control-Joint Gaskets: Made from styrene-butadiene-rubber compound, complying with ASTM D 2000, Designation M2AA-805 or PVC, complying with ASTM D 2287, Type PVC-65406 and designed to fit standard sash block and to maintain lateral stability in masonry wall; size and configuration as indicated

G. Flashing: Non-Asphalt composite membrane, 40 mil, self-adhesive, reinforced composite flashing membrane. Provide pre-finished galvanized metal drip edge. Provide preformed corners, end dams, other special shapes, termination bars at surface mounted applications, mastic and seaming materials produced and recommended by flashing manufacturer.
   1. Hohmann & Barnard, Inc.; Textroflash.
   2. DuPont; Thru-Wall Flashing.
   3. Substitutions: Under provisions of Division 01.

H. Mortar Dropping Control/Cavity Filter: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
   1. MortarNet USA

I. Cleaner: Type recommended by masonry manufacturer.

8.05 MASONRY SEALER

A. Sure Klean® Weather Seal Blok-Guard® & Graffiti Control 15 by PROSOCO, Inc., 3741 Greenway Circle, Lawrence, KS 66046. Phone: (800) 255-4255;

B. Before applying, read “Preparation” and “Safety Information” sections in the Manufacturer’s Product Data Sheet for Weather Seal Blok-Guard® & Graffiti Control 15. Refer to the Product Data Sheet for additional information about application of Blok-Guard® & Graffiti Control 15. Do not dilute or alter.

C. Spray or roller apply according to manufacturer’s instructions.

D. Lightweight block and extremely porous masonry will need two coats. Protect treated surfaces from rain for 4-6 hours.

E. Provide owner with cleaning instructions and one container of appropriate cleaner as per manufacturer’s recommendation.

F. Install at interior and exterior masonry wall surfaces.

G. **PART 3 - EXECUTION**

9.01 INSTALLATION

A. Installation Requirements: Refer to structural engineering drawings and specifications for installation information.
   1. Thickness: Build masonry construction to the full thickness shown, Build single-wythe walls to the actual thickness of the masonry units, using units of nominal thickness shown or specified.
   2. All head and bed joints shall be a nominal 3/8” thick, concave struck, unless noted otherwise.
   3. Build chases and recesses as shown and as required for the work of other trades. Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.
   4. Cut masonry units with motor-driven saw designed to cut masonry with clean sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly, Use full units without cutting wherever possible. Use dry cutting saws to cut concrete masonry units.
   5. Do not wet concrete masonry units.
   6. Pattern Bond: Lay exposed masonry in the bond pattern shown or, if not shown, lay in running bond vertical joint in each course centered on units in courses above and below. Bond and interlock each course of each wythe at corners unless otherwise shown.
   7. Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to properly locate openings, movement-type joints, returns and offsets. Avoid the use of less-than-half size units at corners, jambs and wherever possible at other locations. Maintain masonry courses to uniform dimensions. Form horizontal and vertical joints of uniform thickness.
   8. Lay-up walls plumb and with courses level, accurately spaced and coordinated with other work.
   9. All hollow masonry to be reinforced shall be marked with keel at the bottom of the wall at the cells where dowels occur. Rebar is to be placed and grouted.
   10. Cells containing rebar shall be grouted solid from the bottom to the top of the wall. Cleanouts shall be provided at the bottom of walls at all cells to be grouted where the grout pour exceeds 4' in height.

9.02 LINTELS

A. Install loose lintels of steel and other materials where shown or required.

B. Provide masonry lintels where shown and wherever openings of more than 1'-0" are shown without structural steel or other supporting lintels. Provide precast or formed-in-place masonry lintels. Thoroughly cure precast lintels before handling and installation. Temporarily support formed-in-place lintels.
   1. For hollow concrete masonry unit walls, use specially formed “U” shaped lintel units with reinforcing bars placed as shown and filled with grout of consistency required to completely fill space between bars and masonry unit.
   2. Provide minimum bearing of 8" at each jamb, unless otherwise indicated.

9.03 CONTROL AND EXPANSION JOINTS

A. Provide vertical expansion, control and isolation joints in masonry where shown or as required. Build-in related masonry accessory items as the masonry work progresses.

9.04 FLASHING OF MASONRY WORK

A. Provide concealed flashings in masonry work at, or above, all shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall so as to divert such water tot he exterior. Prepare masonry surfaces smooth and free from projections which could puncture flashing. Place through-wall flashing on bed of mortar and cover with mortar. Seal penetrations in flashing with mastic before covering with mortar.

1. Extend flashings the full length of lintels and shelf angels and minimum of 4" into masonry each end. Extend flashing from a line 1/2" in from exterior face of outer wythe of masonry, through the outer wythe, turned up a minimum 4", and securely fasten to the wall sheathing, bedding the upper flange in full bed of adhesive. At heads, sills, jambs and terminations, turn up ends not less than 2" to form a pan.
2. Provide weepholes in the head joints of the same course of masonry bedded in the flashing mortar.

9.05 REPAIR, POINTING AND CLEANING

A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

B. Pointing: During the tooling of joints, enlarge any voids or holes, except weepholes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds.

C. Clean exposed CMU masonry by dry brushing at the end of each day's work and after final pointing to remove mortar spots and droppings. Comply with recommendations in NCMA TEK Bulletin No. 28.

D. Caulking: Caulk fully any projections, accessories, grills, covers, trim, door and window jambs/heads with compatible sealant approval by the Architect for properties and color selection.

END OF SECTION

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

9.06 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and technical Specification sections, apply to Work of this Section.

9.07 SUMMARY

A. Section includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated:
   1. Framing with dimension lumber.
   2. Wood grounds, nailers, and blocking.
   3. Backing panels.
   4. Sheathing.

9.08 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, color charts, actual finish color samples and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

9.09 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

B. Lumber Standards and Grade Stamps: U.S. Product Standard PS 20, American Softwood Lumber Standard and inspection agency grade stamps.

C. Construction Panel Standards: PS 1, U.S. Product Standard for Construction and Industrial Plywood; APA PRP 108.

D. Wood Framing Standards: NFPA House Framing Manual.
   1. Exterior Wall Framing: 2 inch by 6 inch nominal studs, 16 inches on center.
   2. Interior Wall Framing: 2 inch by 4 inch studs, 16 inches on center unless noted otherwise.

E. Preservative Treatment: AWPA C2 for lumber and AWPA C9 for plywood; waterborne pressure treatment. Provide for wood in contact with soil, concrete, masonry, roofing, flashing, dampproofing and waterproofing.

F. Fire Retardant Treatment: AWPA C20 for lumber and AWPA C27 for plywood; noncorrosive type. Provide at building interior where required by code.

G. ANSI-AITC A 190.1, Structural Glue Laminated Timber; AITC 117 design standard specifications for structural glue laminated timber of softwood species.

H. Preservative treatment, structural glue laminated units: prior to giving, AWPA C28, Type B or C; or after gluing, AWPA C28, Type A, C or D.

I. Tolerances: Not more than 1/8 inch in 10 feet deviation from true plane, plumb, level and proper relation to adjacent surfaces in finished work.

9.10 DELIVERY AND STORAGE

A. Store lumber in a dry location, under cover, protected from weather.

PART 2 - PRODUCTS

10.01 MATERIALS

A. Dimension Lumber: use size, species and grade for structural elements as shown on the drawings. For all components not labeled, use the following:
   1. Light Framing: Stud, No. 2 or standard grade, Spruce-Pine-Fir (NLGA).Fixed Units: N/A
   2. Exposed Framing: Appearance grade.

B. Miscellaneous Lumber: Provide wood for support of attachment of other work including cant strips, bucks, nailers, blocking, furring, grounds stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows:
   1. Moisture Content: 19 percent maximum for wood items not specified to receive wood preservative treatment.
   2. Grade: Common grade light framing, No. 2 Common or Standard grade boards per WCLIB or WWPA rules or No. 2 boards per SPIB rules.

C. Construction Panels: Comply with PS 1 “US Produce Standard for Construction and Industrial Plywood” for plywood panels and, for products not manufactured under PS 1 provisions, with American Plywood Associates (APA) “Performance Standard and Policies for Structural-Use Panels”, Form No. E445.
   1. Moisture Content: 19 percent maximum for wood items not specified to receive wood preservative treatment.
   2. Grade: Common grade light framing, No. 2 Common or Standard grade boards per WCLIB or WWPA rules or No. 2 boards per SPIB rules.

D. Auxiliary Materials:
   1. Sill Sealer Gaskets: Glass fiber resilient insulation fabricated in strip form for use as a sill sealer; 1" nominal thickness widths to suit width of sill members indicated; in rolls of 50' or 100' in length.
   2. Framing Anchors and Fasteners: Non corrosive, suitable for load and exposure. Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Drywall screws are not acceptable.
   3. Joist Hangers: Use Simpson joist hangers with connections installed according to manufacturer’s recommendations.

E. Construction Panels:
   1. Wall Sheathing: APA sheathing, exterior.
   2. Roof Sheathing: APA sheathing, exposure 1.
   3. Plywood Backing Panels: APA C-D plugged exposure 1 with exterior glue, fire retardant treated.

PART 3 - EXECUTION

11.01 INSTALLATION

A. Wood framing: Comply with recommendations of NFPA Manual for House Framing, NFPA Recommended Nailing Schedule, and NFPA National Design Specifications for Wood Construction.

B. Plywood and OSB: Comply with recommendations of APA Design and Construction Guide - Residential and Commercial.

C. Provide nailers, blocking and grounds where required. Set work plumb, level and accurately cut.

D. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with other work.

E. Comply with manufacturer's requirements for cutting, handling, fastening and working treated

materials.

F. Restore damaged components. Protect work from damage.

G. Comply with recommendations of ANSI/AITC A 190.1 structural glue laminated timber.

END OF SECTION

SECTION 06132 - TECTUM CEILING PANEL
PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Division 1 Specification sections, apply to Work of this Section.

1.2 SUMMARY

A. Section includes:
   1. 2" Cementitious wood fiber plank exterior ceiling panels mounted to underside of joists at exterior dog run locations.

1.3 RELATED SECTIONS

A. Section 06100 Rough Carpentry

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data, color charts, samples and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections and relationship with adjacent construction.

C. Provide sample for verification of specified finish.

1.5 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

B. Regulatory Requirements and Approvals: ICC-ES Evaluation Report ESR-1112.

1.6 DELIVERY AND STORAGE

A. Deliver, handle, and store materials in accordance with manufacturer's instructions. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

B. Provide labels indicating brand name, deck style, plank size and plank thickness.

1.7 WARRANTY

A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Tectum, Inc.
   1. Tectum 1 Roof Deck Plank

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Tectum 1 Roof Deck Plank
   1. 2" Thick Panel

B. Fasteners: Per manufacturer's instructions for type and spacing.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that site conditions are acceptable for installation of roof deck panel system.

B. Do not proceed with installation of roof deck panel system until unacceptable conditions are corrected.

1.4 INSTALLATION

A. Roof Deck Plank Installation:

- Place planks on joists with square cut ends butted tightly together.
- Secure planks to joists with per manufacturer's instructions.
- Apply adhesive recommended by manufacturer to ensure diaphragm performance as designed.

1.5 ADJUSTING, CLEANING, PROTECTION

A. Clean exposed surfaces of all exterior ceiling panel surfaces.

B. Remove and replace work that cannot be successfully repaired to permanently eliminate evidence of structural damage.

C. Protect installed work from damage due to weather related moisture.

D. Protect installed work from damage due to subsequent construction activity on the site so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION

SECTION 06192 - WOOD TRUSSES

PART 1 - GENERAL

11.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

11.03 SUMMARY

A. Provide prefabricated and pre-engineered wood trusses:
   1. Monopitch trusses.
   2. Parallel chord wood trusses.

11.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, color charts, actual finish color samples and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

11.05 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

B. Standards: TPI, Design Specification for Metal Plate Connected Wood Trusses; TPI, Design Specification for Metal Plate Connected Parallel Chord Wood Trusses.

C. Design Engineering: Registered engineer.

D. Fire Retardant Treatment: AWPA C20 for lumber and AWPA C27 for plywood;

11.06 DELIVERY AND STORAGE

A. Store trusses in a dry location, under cover, protected from weather.

PART 2 - PRODUCTS

12.01 MATERIALS

A. Wood Trusses:
   1. Lumber Standard: PS 20 American Softwood Lumber Standard.
   2. Species: Manufacturer's option.
   3. Dressing: Dressed four sides.
   4. Moisture Content: Seasoned, 19 percent maximum.
   5. Grade for Chord Members: No. 2, or better grade.
   6. Grade for Web Members: Same as chord grade.

B. Connectors, Fasteners, and Metal Framing Anchors:
   1. Connectors: Hot dip galvanized steel sheet, ASTM A 446, Grade A; ASTM A 525, G60.
   2. Nails, Wire, Brads, and Staples: FS FF N 105.
   3. Power Driven Fasteners: National Evaluation Report NER 272.
   4. Wood Screws: ANSI B18.6.1.
   5. Lag Bolts: ANSI B18.2.1.
   6. Bolts: ASTM A 307, Grade A; ASTM A 563.
   7. Metal Framing Anchors: Hot dip galvanized steel sheet, ASTM A 446, Grade A; ASTM A 525, G60.

PART 3 - EXECUTION

13.01 INSTALLATION

A. Comply with recommendations of TPI Design Specifications for Metal Plate Connected Wood Trusses.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.

C. Restore damaged components. Clean and protect work from damage.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 06201 – EXTERIOR FINISH CARPENTRY

PART 1– GENERAL

1.02 SUMMARY

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification Sections, apply to work of this section.
   1. Section Includes:
   2. Exterior trim and exposed framing.

1.03 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.
   1. Shop Drawings: Submit shop drawings indicating material characteristics, details of construction, connections and relationship with adjacent construction.
   2. Samples: Submit two representative samples of each material specified indicating visual characteristics and finish. Include range samples if variation of finish is anticipated.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations.

B. Provide products of acceptable manufacturers, which have been in satisfactory use in similar service for three years. Use experienced installers.
   1. Deliver, handle and store materials in accordance with manufacturer's instructions.
   2. Standards:
   3. Architectural Woodwork institute (AWI) "Architectural Woodwork Quality Standards".
   4. Woodwork institute of California (WIC) "Manual of Millwork".

C. Preservative Treatment: Non-pressure method, exterior type, NWWDA I.S.4.

1.05 WARRANTY

A. Provide manufacturer's standard warranty against defects in manufacturing that causes the products to rot, corrode, delaminate or excessively swell from moisture.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Exterior Wood Trim and Exposed framing.
   1. Species and Grade: Rough Sawn cedar.
   2. Texture: Rough
   3. Finish: See I sheets for color.

B. Fasteners:
   1. Nails: Stainless steel, aluminum or hot-dip galvanized siding nails. Use fasteners designed for wood trim and wood siding.
   2. Screws and Anchors: Non-corrosive type required for secure anchorage.
   3. Adhesives: As recommended by manufacturer and complying with fire-resistance requirements.

C. Trim Miscellaneous Materials:
   1. Fasteners: Stainless steel, non-corrosive aluminum or hot-dip galvanized siding nails. Use fasteners as recommended per manufacturer.

2. Flashing: Comply with requirements of Division 7 Section, “Flashing and Sheet Metal” for flashing materials installed in finish carpentry.
   a. Horizontal Joint Flashing for Panel Siding: Preformed galvanized steel or aluminum.
3. Felt Underlayment: Asphalt saturated organic felt, unperforated, ASTM D 226, Type 1, No. 15.
4. Air Infiltration Barrier: 100 percent flash spunbonded high density polyethylene fibers bonded by heat and pressure into a weather resistant sheet, equivalent to Tyvek HomeWrap.
5. Adhesives: As recommended by manufacturer and complying with fire-resistance requirements.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Provide work to sizes, shapes and profiles indicated. Install work to comply with quality standards referenced. Back prime work and install plumb, level and straight with tight joints; scribe work to fit adjacent surfaces.

1. Install materials and systems in accordance with manufacturer’s instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Use non-corrosive fasteners for exterior work. Coordinate with work of other sections.
2. Comply with manufacturer’s requirements for cutting, drilling, milling, routing, handling, fastening, thermal expansion and working treated materials.
3. Repair minor damage, clean and protect.

END OF SECTION

SECTION 06402 - INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

13.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

13.03 SUMMARY

A. Provide interior architectural woodwork:
   1. Wood Trim.
   2. Casework, custom cabinetry and countertops.
   3. Ornamental items.
   4. Shelving and closet specialties.

13.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, color charts, actual finish color samples and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

C. Samples: Submit the following for selection and approval:
   1. Laminate sample chips
   2. Exposed cabinet hardware
   3. Door and trim style options
   4. Color samples

13.05 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

B. The work of this section shall comply with the following codes and standards including all current editions, revisions and supplements:
   1. Commercial Standard CS 236, Mat Formed Wood Particle Board.
   2. Product Standards PS 1, Construction and Industrial Plywood.

C. Standards: Architectural Woodwork Institute (AWI) "Architectural Woodwork Quality Standards."

D. Formaldehyde Emission Levels:
   1. Particleboard: NPA 8 compliance.
   2. Medium Density Fiberboard: NPA 9 compliance.
   3. Hardwood Plywood: HPMA FE compliance.

13.06 DELIVERY AND STORAGE

A. Store in a dry location, under cover, protected from weather.

PART 2 - PRODUCTS

14.01 MATERIALS

A. Rough Hardware: Nails, bolts, screws, anchors, etc., required for work under this section are to be provided.

B. Wood Trim:
   1. Species: Any closed-grain hardwood.
   2. Rough sawn cedar.

C. Interior Plastic Laminate Clad Casework:

1. Laminate: High pressure decorative laminate, NEMA LD 3.
2. Grade: Custom.
3. Face Style: Full overlay.
4. Frame Fabrication: Frameless.
5. Edge: .018mm PVC edge around doors of upper cabinets, 3mm PVC edge around doors and drawers on base cabinets by Doelkin-Woodtape.

D. Casework Hardware and Auxiliary Materials:
1. Hardware Standard: ANSI/BHMA A156.9.
2. Hardware Finish and Base Metal: Chrome plated steel.
3. Glass: Clear float glass, ASTM C 1036, and Clear tempered glass, ASTM C 1048.
4. Metabox drawer systems

E. Interior Plastic Laminate Clad Countertops:
1. Laminate: High pressure decorative laminate, NEMA LD-3, Nominal 0.050" thick.
2. Grade: Custom.
3. Edge: PVC 3mm 1-1/8" solid top balanced w/ filament backer edge banding 1-5/16" by Doellken-Woodtape.

F. Auxiliary Materials:
1. Screws: FS FF-S-111.
2. Nails: FS FF-N-105.
3. Anchors: Type required for secure anchorage.

G. Shelving and Closet Specialties:
1. Shelving: PVC coated wire shelving system.
2. Closet Rods: PVC Coated wire closet rod system.

H. Factory Finishing:
1. Transparent Finish: Custom grade with stain to match adjacent plastic laminate.
2. Opaque Finish: Custom grade with rubbed medium gloss sheen.

PART 3 - EXECUTION

15.01 INSTALLATION

A. Provide work to sizes, shapes, and profiles indicated. Install work to comply with quality standards referenced. Conceal fasteners to the greatest extent practical. Back prime work and install plumb, level and straight with tight joints; scribe work to fit.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections.

C. Comply with manufacturer's requirements for cutting, handling, fastening and working treated materials.

D. Repair minor damage, clean and protect.

END OF SECTION

SECTION 07050 – WEATHER BARRIERS

PART 1 - GENERAL

15.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

15.03 SUMMARY

A. Section includes:
   1. Fluid-applied, vapor permeable weather barrier membrane. (DuPont™ Tyvek® Fluid Applied WB System.)
   2. Joint Treatment:
      Joint Tape
      Joint Compound. (DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound, trowel grade)
   3. Flashing:
      a. Vapor Permeable Fluid-Applied Elastomeric Flashing. (DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound or DuPont™ Tyvek® Fluid Applied Flashing – Brush Grade, as manufactured by DuPont™)
      Flexible Flashing.(DuPont™ FlexWrap™NF)
      Sheet Flashing. (DuPont™ StraightFlash™)
   4. Sealant: (DuPont™ Sealant for Tyvek® Fluid Applied Systems)
   5. Primers for flexible flashing and sheet flashing.

15.04 REFERENCES

A. ASTM C 1250 – Standard Test Method for Nonvolatile Content of Cold Liquid-Applied Elastomeric Waterproofing Membranes.
B. ASTM D 412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension.
C. ASTM E 96 - Test Method for Water Vapor Transmission of Materials
D. ASTM E 283 – Standard Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences Across the Specimen.
E. ASTM E 331 – Standard Test Method for Water Penetration of Exterior Windows, Skylight, Doors and Curtain Walls by Uniform Static Air Pressure Differences.
F. ASTM E 779 – Standard Test Method for Determining Air Leakage Rate by Fan Pressurization.
G. ASTM E 783 – Standard Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors.
H. ASTM E 1105 – Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.
I. ASTM E 1186 – Standard Practices for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems.
J. ASTM E 1677 - Specification for Air Retarder Material or System for Framed Building Walls.
K. ASTM E 2178 – Standard Test Method for Air Permeance of Building Materials
L. ASTM E 2357 – Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.
M. ASTM C 1305 - Standard Test Method for Crack Bridging Ability of Liquid-Applied Waterproofing Membrane.

15.05 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, color charts, actual finish color samples and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.
C. Design Data, Test Reports: Provide manufacturer test reports indicating product compliance with indicated requirements.
D. Manufacturer Instructions: Provide manufacturer's written installation instructions.
E. Manufacturer's Field Service Reports: Provide site reports from authorized field service representative, indicating observation of weather barrier system installation.

15.06 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.
B. Installer shall have experience with installation of commercial fluid-applied weather barrier assemblies under similar conditions. Installer shall be trained and certified for installation by manufacturer.
C. Review requirements for sequencing of installation of weather barrier system with installation of windows, doors, louvers and flashings to provide a weather tight barrier system.

15.07 DELIVERY AND STORAGE

A. Store products in a dry location, under cover, protected from weather.

15.08 WARRANTY

A. Approval by weather barrier manufacturer for warranty is required prior to assembly installation

PART 2 - PRODUCTS

16.01 MANUFACTURERS

A. Basis of Design Product: DuPont Building Innovations; 4417 Lancaster Pike, Chestnut Run Plaza 728, Wilmington, DE 19805; 1.800.44TYVEK (8-9835); http://weatherization.tyvek.com
B. Substitutions: Under provisions of Division 01.

16.02 MATERIALS

A. A single-component, low VOC, 25 mil think synthetic polymer fluid applied product with superior elasticity and flexibility providing resistance to air flow, bulk water and wind driven rain yet allows moisture vapor to escape.
B. Basis of Design: DuPont™ Tyvek® Fluid Applied WB System; including DuPont™ Tyvek® Fluid Applied WB, DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound, DuPont™ Tyvek® Fluid Applied Flashing – Brush Grade and DuPont™ Sealant for Tyvek® Fluid Applied Systems.
C. Performance Characteristics:
    1. Air Penetration Resistance (Material): 0.0002 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E 2178. Air infiltration greater than 10,000 seconds per 100cc, when tested in accordance with TAPPI Test Method T-460.
    2. Air Penetration Resistance (System / Assembly): ≤ 0.01 cfm/ft2 at 75 Pa, when tested in accordance with ASTM E 2357. ≤ 0.01 cfm/ft2 at 75 Pa, Type I Air Barrier, when tested in accordance with ASTM E 1677.
    3. Water Vapor Transmission: 25 perms, when tested in accordance with ASTM E 96, Method B at 25 mils DFT (Dry Film Thickness).
    4. Water Penetration Resistance: Greater than 1000 cm when tested in accordance with AATCC Test Method 127. No leakage at 15 psf when tested in accordance with ASTM E 331.
    5. Tensile Strength: Minimum 169 lbs/in², when tested in accordance with ASTM D 412.
    6. Estimated Elongation: 420% in accordance with ASTM D 412.

7. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E 84. Flame Spread: 25, Smoke Developed: 25
8. UV Resistance: 9 month
9. Volatile Organic Content (VOC): Less than 2% (25-30 g/L) when measured in accordance with ASTM C 1250.
10. Low Temperature Crack Bridging: Pass, when tested in accordance with ASTM C 1305.

D. Accessories: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
1. Joint Treatment:
2. Joint Tape: Product: Self-adhered fiberglass mesh tape as recommended by weather barrier manufacturer.
3. Joint Compound: Fluid-applied, vapor permeable, elastomeric flashing material; trowel applied. Product: DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound.
4. Flashing: Vapor permeable fluid-applied elastomeric flashing: Product: [DuPont™ Tyvek® Fluid Applied Flashing and Joint Compound] or [DuPont™ Tyvek® Fluid Applied Flashing – Brush Grade, as manufactured by DuPont™]
5. Flexible flashing with butyl adhesive layer - Product: DuPont™ FlexWrap™ NF.
6. Sheet flashing with butyl adhesive layer - Product: DuPont™ StraightFlash™.
7. Sealant: Elastomeric; non-vapor permeable sealant; compatible with weather barrier. Product: DuPont™ Sealant for Tyvek® Fluid Applied Systems.
8. Primers for flexible flashing and sheet flashing: Provide flashing manufacturer recommended primer to assist in adhesion between substrate and flashing.

PART 3 - EXECUTION

17.01 INSTALLATION

A. Verify substrate and surface conditions are in accordance with weather barrier manufacturer recommended tolerances prior to installation of weather barreir and accessories.

B. Install weather barrier prior to installation of windows and doors.

C. Start weather barrier installation at a building corner, leaving 6-12 inchs of weather barrier extended beyond corner to overlap.

D. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather barrier plumb and level

E. Sill Plate Interface: Extend lower edge of weather barrier over sil plate interface 3-6 inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer.

F. Window and Door Openings: Extend weather barrier completely over openings.

G. Overlap Weather Barrier: Exterior corners – minimum 12”, seams – minimum 6”.

17.02 FIELD QUALITY CONTROL

A. Notify manufacturer’s designated representative to obtain periodic observations of weather barrier assembly installation. Clean glass surfaces promptly after installation. Remove excess sealant materials.

END OF SECTION

SECTION 07210 - BUILDING INSULATION

PART 1 - GENERAL

17.03 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

17.04 SUMMARY

A. Section includes:
   1. Fiberglass batt insulation.
   2. Sound Attenuation Batts
   3. Rigid Insulation

17.05 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, and installation instructions for each material and product used.

17.06 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

B. Thicknesses indicated are for thermal conductivity (k-value at 75 degrees F or 24 degrees C) specified for each material. Provide adjusted thicknesses as directed for equivalent use of material having a different thermal conductivity. Where insulation is identified by "R" value, provide thickness to achieve indicated value.

C. Comply with fire-resistance, flammability and insurance ratings indicated, and comply with regulations as interpreted by governing authorities.

17.07 DELIVERY AND STORAGE

A. Store products in a dry location, under cover, protected from weather.

B. Do not expose to sunlight, except to extent necessary for period of installation and concealment.

PART 2 - PRODUCTS

18.01 MATERIALS

A. Blanket/Batt Insulation:
   1. Type: Glass fiber (inorganic, non-asbestos, fibers formed with hinders into resilient, flexible blankets or semi-rigid batts); FS HH-I-521, Type as indicated, densities of not less than 0.5 lb. Per cu. Ft. for glass fiber units, k-value of 0.27; manufacturer's standard lengths and widths as required to coordinate with spaces to be insulated; Owens-Corning Fiberglass Corporation; types as follows:
      a) Provide paper or foil faced R-13 units in metal/wood framed walls, semi-rigid where self-support is required. Provide paper or foil faced R-38 in wood truss area.
   2. Type: Sound Attenuation Batts: In partitions where designated, provide full thickness sound control blankets to fill all cavities; Thermal rated unfaced insulation will be acceptable.

B. Rigid Insulation: Provide R-6 per inch polyisocyanurate on exterior face of wall over exterior sheathing as shown on Architectural sections. Attach using sealed fasteners as per energy code requirements.

C. Accessories:

1. Adhesives and mechanical anchors and clips, as recommended by insulation manufacturer and complying with fire-resistance requirements.
2. Protection board.
3. Crack sealers and tapes.

PART 3 - EXECUTION

19.01 EXAMINATION

A. Installer must examine substrates and conditions under which insulation work is to be performed, and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with insulation work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.

B. Clean substrates of substances harmful to insulations or vapor barriers, including removal of projections which might puncture vapor barriers.

19.02 INSTALLATION

H. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction. Coordinate with work of other sections. Provide full thickness in one layer over entire area, tightly fitting around penetrations.

I. Install vapor retarder over entire area of inside face of exterior walls and elsewhere as indicated. Seal all seams and around perimeter and penetrations with duct tape to form a continuous vapor retarder free of holes.

J. Protect installed insulation and vapor retarder. Repair punctures and tears in vapor retarder immediately before concealment by other work.

K. Liquid Foam Insulation into stud cavities to completely fill voids.

L. Air Infiltration Barrier - install in strict accordance with manufacturer written instructions for “best practice” installation. Fully wrap structure in continuous sheets. Tape all seams and caulk joint at sill plate. Do not install windows prior. Use “x” cut method at window openings. Do not expose to weather longer than eight weeks. Repair any damage sheets or seams prior to covering.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 07460 – FIBER-CEMENT BOARD SIDING

PART 1 - GENERAL

1.01 SUBMITTALS

A. As follows:
   1. Product Data: For each type of product specified. Include installation instructions and available profiles, textures, and colors.
   2. Samples: Full-size units of each type of siding and trim indicated; for each color, texture, and pattern specified.

B. Deliver materials to Project site in manufacturer's unopened packages or bundles with labels intact. Store in a dry, well-ventilated, weathertight place. Comply with manufacturer's written instructions for storage, handling, and protection.

1.02 PRODUCTS

A. Manufacturers: James Hardie Building Products, or approved equal.

   1. Fiber-cement board Siding: Non-asbestos fiber-cement siding to comply with ASTM Standard Specification C1186 Grade II, Type A. Siding to meet the following builidng code compliance National Evaluation Report No. NER 405 (BOCA, ICBO, SBCCI); City of Los Angeles, research Report No. 24862; Metro Dade County, Florida Acceptance No. 94-1234.04; US Department of Housing and Urban Development Materials Release 1263a; California DSA PS-019; and City of New York MEA 223-93-M. Non-asbestos fiber-cement siding to be non-combustible when tested in accordance with ASTM test method E136.
      a. Fiber-cement board Siding Type: Vertical board and Batten siding: Select Cedarmill Verticlal Siding 4’ x 8’ with Hard trim batten boards.
      b. Fiber-cement board Siding Color: As noted on A201

   2. Fiber-cement board Soffit: Roof soffit Vented Cedarmill Soffit, ¼” thick, 24” x 8’. Under North & East porch: Beaded Porch Panel 4 x 8
      a. Color: Per a201
   3. Fiber-cement board trim: Batten Board - Rustic Grain, ¾” x 2.5” x 12’. 4/4 boards Rustic, ¾” x 12’ x width as needed and specified on drawings.
      a. Color: Per A201

   4. Siding Accessories: Provide starter strips, edge trim, window head flashing, window and door surrounds, and other items as detailed or recommended by manufacturer for building configuration.

   5. Siding Auxiliary Materials:
      1. Felt Underlayment: Asphalt saturated organic felt, unperforated, ASTM D 226, Type 1, No. 15.
      2. Fasteners: Stainless steel, non-corrosive aluminum or hot-dip galvanized siding nails.
      3. Horizontal Joint Flashing for Panel Siding: Preformed galvanized steel or aluminum.

B. Fasteners: Noncorrosive siding nails, in sufficient length to meet the applicable building code requirements.

1.03 EXECUTION

A. Coordinate installation with flashings and other adjoining construction to ensure proper sequencing.

B. Comply with siding manufacturer's written installation instructions.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 07530 - SINGLE-PLY MEMBRANE ROOFING

PART 1 - GENERAL

PART 1 - GENERAL

1.0 SUMMARY

A. This Section includes the following:
   1. Adhered membrane roofing system.
      a. Base Bid – Adhered 60 mil PVC membrane.
      b. Alternate Bid – Adhered 60 mil TPO Fleece Back membrane.
   2. 1/4 ” Dens Deck Prime hard board.
   3. 20 year Manufacturers System Warranty, Installers 5 year workmanship warranty.

1.1 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by roofing membrane manufacturer based on testing and field experience.

C. FMG Listing: Provide roofing membrane, base flashings, and component materials that comply with requirements in FMG 4450 and FMG 4470 as part of a membrane roofing system and that are listed in FMG's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FMG markings.
   1. Fire/Windstorm Classification: Class 1A-90.
   2. Hail Resistance: SH.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other Work.
   1. Base flashings and membrane terminations.
   2. Tapered insulation, including slopes.
   3. Insulation fastening patterns.

C. Samples for Verification: For the following products:
   1. Sheet roofing, of color specified, including T-shaped side and end lap seam.
   2. Roof insulation.
   3. Walkway pads or rolls.
   4. Metal termination bars.

D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is accepted, authorized, or licensed by manufacturer to install roofing system.

E. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article.
   1. Submit evidence of meeting performance requirements.

F. Qualification Data: For Installer and manufacturer.

G. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for components of roofing system.

H. Research/Evaluation Reports: For components of membrane roofing system.

I. Maintenance Data: For roofing system to include in maintenance manuals.

J. Warranties: Special warranties specified in this Section.

K. Inspection Report: Copy of roofing system manufacturer's inspection report of completed roofing installation.

1.3 QUALITY ASSURANCE

A. Installer Qualifications: A qualified firm that is accepted, authorized, or licensed by roofing system manufacturer to install manufacturer's product and that is eligible to receive manufacturer's warranty.

B. Manufacturer Qualifications: A qualified manufacturer that has UL listing for membrane roofing system identical to that used for this Project.

C. Testing Agency Qualifications: An independent testing agency with the experience and capability to conduct the testing indicated, as documented according to ASTM E 548.

D. Source Limitations: Obtain components for membrane roofing system from roofing membrane manufacturer.

E. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristics indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.

1. Exterior Fire-Test Exposure: Class A; ASTM E 108, for application and roof slopes indicated.
2. Fire-Resistance Ratings: ASTM E 119, for fire-resistance-rated roof assemblies of which roofing system is a part.

F. Pre-installation Roofing Conference: Before starting roof deck construction, conduct conference at Project site. Comply with requirements for preinstallation conferences in Division 1 Section "Quality Control." Review methods and procedures related to roof deck construction and roofing system including, but not limited to, the following:

1. Meet with Owner, Owner’s Representative, Owner’s insurer if applicable, testing and inspecting agency representative, roofing Installer, roofing system manufacturer's representative, deck Installer, and installers whose work interfaces with or affects roofing including installers of roof accessories and roof-mounted equipment.
2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
4. Examine deck substrate conditions and finishes for compliance with requirements, including flatness and fastening.
5. Review structural loading limitations of roof deck during and after roofing.
6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect roofing system.
7. Review governing regulations and requirements for insurance and certificates if applicable.
8. Review temporary protection requirements for roofing system during and after installation.
9. Review roof observation and repair procedures after roofing installation.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.

1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during

installation.

D. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.5 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.6 WARRANTY

A. Manufacturer's Warranty: Manufacturer's standard form, without monetary limitation, in which contractor agrees to repair or replace components of membrane roofing system that fail in materials or workmanship within specified warranty period. Failure includes roof leaks.
   1. Special warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, adhesive, fasteners, cover boards, walkway products and other components of membrane roofing system.
   2. Warranty Period: 20 years.

B. Applicator's Project Warranty: Submit roofing Installer's warranty, on warranty form at end of this Section, signed by Installer, covering Work of this Section, including all components of membrane roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, and walkway products, for the following warranty period:
   1. Warranty Period: Five years.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

1. Products: Subject to compliance with requirements, provide one of the products specified.
2. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PVC ROOFING MEMBRANE (Base Bid)

A. PVC Sheet: ASTM D 4434, Type II, Grade 1, Glass fiber reinforced, as follows:
   1. Product: Subject to compliance with requirements, provide "Sikaplan 60 Adhered by Sarnafil Inc.
   2. Thickness: 60 mils, nominal.
   3. Exposed Face Color: White.

2.3 THERMOPLASTIC POLYOLEFIN ROOFING MEMBRANE (Alternate Bid)

A. Fabric-Reinforced and Fleece backed Thermoplastic Polyolefin Sheet: Uniform, flexible sheet formed from a thermoplastic polyolefin, internally fabric reinforced as follows:
   1. Manufacturers:
      a. Carlisle SynTec Incorporated.
      b. Firestone Building Products Company.
   2. Thickness: 60 mils nominal.
   3. Exposed Face Color: White.
   4. Physical Properties:
      a. Breaking Strength: 225 lbf; ASTM D 751, grab method.
      b. Elongation at Break: 15 percent; ASTM D 751.
      c. Tearing Strength: 55 lbf minimum; ASTM D 751, Procedure B.
      d. Brittleness Point: Minus 22 deg F.
      e. Ozone Resistance: No cracks after sample, wrapped around a 3-inch-diameter mandrel, is exposed for 166 hours to a temperature of 104 deg F and an ozone level of 100 pphm; ASTM D 1149.

f. Resistance to Heat Aging: 90 percent minimum retention of breaking strength, elongation at break, and tearing strength after 166 hours at 240 deg F; ASTM D 573.
g. Water Absorption: Less than 4 percent mass change after 166 hours' immersion at 158 deg F; ASTM D 471.
h. Linear Dimension Change: Plus or minus 2 percent; ASTM D 1204.
i. Resistance to Heat Aging: 90 percent minimum retention of tensile strength, ultimate elongation, and tear strength after 166 hours at 240 deg F; ASTM D 573.
j. Water Absorption: Less than 4 percent mass change after 166 hours' immersion at 158 deg F; ASTM D 471.
k. Linear Dimension Change: Plus or minus 2 percent; ASTM D 1204.

2.4 AUXILIARY MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with membrane roofing.
    1. Liquid-type auxiliary materials shall meet VOC limits of authorities having jurisdiction.
B. Sheet Flashing: Manufacturer's standard sheet flashing of same material, type, reinforcement, thickness, and color as sheet membrane.
C. Bonding Adhesive: Manufacturer's standard solvent or water-based bonding adhesive for membrane, and solvent-based bonding adhesive for base flashings.
D. Metal Termination Bars: Manufacturer's standard predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.
E. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening membrane to substrate, and acceptable to membrane roofing system manufacturer.
F. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, termination reglets, cover strips, and other accessories.

2.5 ROOF INSULATION

A. General: Provide preformed roof insulation boards that comply with requirements and referenced standards, selected from manufacturer's standard sizes and of thicknesses indicated.
B. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.6 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by roofing manufacturer for intended use and compatible with membrane roofing.
B. Fasteners: Factory-coated steel fasteners and metal plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
C. Cover Board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum substrate, 1/4 inch thick.
    1. Product: Subject to compliance with requirements, provide "Dens-Deck Prime" by Georgia-Pacific Corporation.

2.7 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, solid-rubber, slip-resisting, surface-textured walkway rolls, approximately 3/16 inch thick, and acceptable to membrane roofing system manufacturer.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:
    1. Verify that roof openings and penetrations are in place and set and braced and that roof drains are securely clamped in place.
    2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
    3. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Remove sharp projections.
B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.
C. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

3.3 INSULATION INSTALLATION

A. Coordinate installing membrane roofing system components so insulation is not exposed to precipitation or left exposed at the end of the workday.
B. Comply with membrane roofing system manufacturer's written instructions for installing roof insulation.
C. Install tapered insulation in area of roofing to conform to slopes indicated on drawings.
D. Install one or more layers of insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2 inches or greater, install 2 or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.
E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.
F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.
    1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.
G. Mechanically Fastened Insulation: Install each layer of insulation and secure to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.
    1. Fasten insulation according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
    2. Fasten insulation to resist uplift pressure at corners, perimeter, and field of roof.
H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Stagger joints from joints in insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.
    1. Fasten according to requirements in FMG's "Approval Guide" for specified Windstorm Resistance Classification.
    2. Fasten to resist uplift pressure at corners, perimeter, and field of roof.

3.4 ADHERED ROOFING MEMBRANE INSTALLATION

A. Install roofing membrane over area to receive roofing according to membrane roofing system manufacturer's written instructions. Unroll roofing membrane and allow to relax before installing.

1. Install sheet according to ASTM D 5036.

B. Start installation of roofing membrane in presence of membrane roofing system manufacturer's technical personnel.

C. Accurately align roofing membrane and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive:
   1. Solvent based adhesive:Apply solvent-based bonding adhesive to substrate and underside of roofing membrane at rate required by manufacturer and allow to partially dry before installing roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.
   2. Water-based adhesive: Bonding Adhesive: Apply water-based bonding adhesive to substrate at rate required by manufacturer and immediately install roofing membrane. Do not apply bonding adhesive to splice area of roofing membrane.

E. Mechanically or adhesively fasten roofing membrane securely at terminations, penetrations, and perimeter of roofing.

F. Apply roofing membrane with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap roofing membrane, and hot-air weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
   1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
   2. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
   3. Repair tears, voids, and lapped seams in roofing membrane that does not meet requirements.

H. Spread sealant or mastic bed over deck drain flange at deck drains and securely seal roofing membrane in place with clamping ring.

3.5 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.

B. Apply solvent-based bonding adhesive as required by roofing manufacturer. Do not apply bonding adhesive to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with sheet flashing.

D. Clean seam areas and overlap and firmly roll sheet flashings into the adhesive. Weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.6 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate and adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform roof tests and inspections and to prepare test reports.

B. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit report to Owner’s Representative.
   1. Notify Owner’s Representative 48 hours in advance of date and time of inspection.

C. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with specified requirements.

D. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.8 PROTECTING AND CLEANING

A. Protect membrane roofing system from damage and wear during remainder of construction period. When remaining construction will not affect or endanger roofing, inspect roofing for deterioration and damage, describing its nature and extent in a written report, with copies to Owner's Representative.
B. Correct deficiencies in or remove membrane roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
C. Clean overspray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

3.9 ROOFING INSTALLER'S FIVE YEAR WARRANTY

A. WHEREAS <Insert name> of <Insert address>, herein called the "Roofing Installer," has performed roofing and associated work ("work") on the following project:
    1. Owner: <Insert name of Owner.>
    2. Address: <Insert address.>
    3. Building Name/Type: <Insert information.>
    4. Address: <Insert address.>
    5. Area of Work: <Insert information.>
    6. Acceptance Date: <Insert date.>
    7. Warranty Period: Five (5) Years.
    8. Expiration Date: <Insert date.>
B. AND WHEREAS Roofing Installer has contracted (either directly with Owner or indirectly as a subcontractor) to warrant said work against leaks and faulty or defective materials and workmanship for designated Warranty Period,
C. NOW THEREFORE Roofing Installer hereby warrants, subject to terms and conditions herein set forth, that during Warranty Period he will, at his own cost and expense, make or cause to be made such repairs to or replacements of said work as are necessary to correct faulty and defective work and as are necessary to maintain said work in a watertight condition.
D. This Warranty is made subject to the following terms and conditions:
    1. Specifically excluded from this Warranty are damages to work and other parts of the building, and to building contents, caused by:
        a. lightning;
        b. peak gust wind speed exceeding 60 mph;
        c. fire;
        d. failure of roofing system substrate, including cracking, settlement, excessive deflection, deterioration, and decomposition;
        e. faulty construction of parapet walls, copings, chimneys, skylights, vents, equipment supports, and other edge conditions and penetrations of the work;
        f. vapor condensation on bottom of roofing; and
        g. activity on roofing by others, including construction contractors, maintenance personnel, other persons, and animals, whether authorized or unauthorized by Owner.
    2. When work has been damaged by any of foregoing causes, Warranty shall be null and void until such damage has been repaired by Roofing Installer and until cost and expense thereof have been paid by Owner or by another responsible party so designated.
    3. Roofing Installer is responsible for damage to work covered by this Warranty but is not liable for consequential damages to building or building contents resulting from leaks or faults or defects of work.
    4. During Warranty Period, if Owner allows alteration of work by anyone other than Roofing Installer, including cutting, patching, and maintenance in connection with penetrations, attachment of other work, and positioning of anything on roof, this Warranty shall become null and void on date of said alterations, but only to the extent said alterations

affect work covered by this Warranty. If Owner engages Roofing Installer to perform said alterations, Warranty shall not become null and void unless Roofing Installer, before starting said work, shall have notified Owner in writing, showing reasonable cause for claim, that said alterations would likely damage or deteriorate work, thereby reasonably justifying a limitation or termination of this Warranty.

5. During Warranty Period, if original use of roof is changed and it becomes used for, but was not originally specified for, a promenade, work deck, spray-cooled surface, flooded basin, or other use or service more severe than originally specified, this Warranty shall become null and void on date of said change, but only to the extent said change affects work covered by this Warranty.
6. Owner shall promptly notify Roofing Installer of observed, known, or suspected leaks, defects, or deterioration and shall afford reasonable opportunity for Roofing Installer to inspect work and to examine evidence of such leaks, defects, or deterioration.
7. This Warranty is recognized to be the only warranty of Roofing Installer on said work and shall not operate to restrict or cut off Owner from other remedies and resources lawfully available to Owner in cases of roofing failure. Specifically, this Warranty shall not operate to relieve Roofing Installer of responsibility for performance of original work according to requirements of the Contract Documents, regardless of whether Contract was a contract directly with Owner or a subcontract with Owner's General Contractor.

E. IN WITNESS THEREOF, this instrument has been duly executed this <Insert day> day of <Insert month>, <Insert year>.
   1. Authorized Signature: <Insert signature.>
   2. Name: <Insert name.>
   3. Title: <Insert title.>

END OF SECTION

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

19.03 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

19.04 SUMMARY

A. Section includes:
   1. Metal counter flashing and base flashing.
   2. Exterior wall flashing, copings and gravel stops.
   3. Gutters and scuppers.
   4. Sheet metal accessories.

19.05 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

19.06 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

PART 2 - PRODUCTS

20.01 MATERIALS

A. Sheet Metal Flashing and Trim:
   1. Zinc Coated Steel: ASTM A 525, except ASTM A 527 for lock-forming, G90 hot dip galvanized, mill phosphatized where indicated for painting.
   2. Finish: Exposed Surfaces
      a. Fluoropolymer baked enamel finish with Kynar 500 (70%) resins by ELF ATOCHEM OF NORTH AMERICA INC.; "Trinar" by AKZO; "Duranar" by PPG; "Fluropon" By VALSPAR or equal. Total dry film thickness not less than 1.0 mils.
      b. Reference: Meet the requirements of AAMA 620, Specification High Performance Organic Coatings on Coil Coated Architectural Aluminum Substrates
      c. Color: As selected by Architect from manufacturer's complete specified line.
      d. Application: Apply coating systems in strict accordance with manufacturer's printed instructions and recommendations. Refer to Quality Assurance in Part A.
   3. Concealed Surfaces: Manufacturer's standard coating for concealed surfaces.
   4. Thicknesses: Provide the following minimum thicknesses:
      a. Flashing and Counterflashing: .032".
      b. Coping: .040".
      c. Fascia: .040".
      d. Miscellaneous Flashing (not otherwise identified): .032".

B. Flexible Sheet Membrane Flashing: Nonreinforced flexible black elastic sheet, 50 to 65 mils thick, [neoprene] [butyl] [EPDM] synthetic rubber sheet.

C. Fabricated Units: Compliance with SMACNA Sheet Metal Manual.

D. Auxiliary Materials:
   1. Solder: For use with steel or copper, provide 50 -50 tin/lead solder (ASTM B 32), with rosin flux.

2. Fasteners: Same metal as flashing/sheet metal or other noncorrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.
3. Bituminous isolation coating.
4. Mastic and elastomeric sealants: Polyisobutylene; nonhardening, nonskinning, nondrying nonmigrating sealant.
5. Epoxy seam sealer.
6. Rosin-sized building paper slip sheet.
7. Polyethylene underlayment.
8. Reglets and metal accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.
9. Gutter and conductor head guards.
10. Asphaltic roofing cement.

PART 3 - EXECUTION

21.01 INSTALLATION

A. Follow recommendations of SMACNA Sheet Metal Manual. Allow for expansion. Isolate dissimilar materials.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

C. Restore damaged components and finishes. Clean and protect work from damage Liquid Foam Insulation into stud cavities to completely fill voids.

END OF SECTION

SECTION 07720 - ROOF ACCESSORIES

PART 1 - GENERAL

21.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

21.03 SUMMARY

A. Section includes:
   1. Prefabricated curb and equipment support units.
   2. Ridge vents.

21.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

21.05 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

B. Heat and Smoke Vent Insurance Requirements: UL and FM approval or acceptance.

PART 2 - PRODUCTS

22.01 MATERIALS

A. Prefabricated Curb and Equipment Support Units:
   1. Type: Designed for roof type and equipment.
   2. Materials: Steel, 14 gage (.0747 inch), baked enamel finish.

B. Ridge Vents:
   1. Type: Baffled ridge vent.
   2. Materials: Aluminum.
   3. Materials: Ridge Master, Mid America Building Products (734) 459-5151.

PART 3 - EXECUTION

23.01 INSTALLATION

A. Comply with accessory manufacturers' instructions and recommendations. Coordinate installation with roofing system to ensure weathertight performance. Anchor securely to structure to withstand inward and outward loads. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

B. Isolate dissimilar metals to prevent galvanic corrosion.

C. Test and operate units; clean, lubricate and adjust moving parts. Leave units ready for field painting.

END OF SECTION

SECTION 07901 - JOINT SEALANTS

PART 1 - GENERAL

23.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

23.03 SUMMARY

A. Provide joint sealers at interior and exterior vertical and horizontal joints.

B. Refer to sections of Divisions 15 and 16 for joint sealers in mechanical and electrical work; not work of this section.

C. All applications of sealant to be exposed to view must match adjacent surfaces. If two or more colors converge at sealant location, the sealant selected must match one of the adjacent colors

23.04 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, and installation instructions for each material and product used.

23.05 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.

PART 2 - PRODUCTS

24.01 MATERIALS

A. All materials, unless otherwise specifically approved by Architect, shall be single or multi-component, self-leveling or non-sagging types in colors to match adjacent surfaces where exposed to view, and shall be one of the following or an approved equal.

B. Exterior Joints:
   1. Paving Joint Sealants: Type: Single component Polysulfide Sealant, ASTM C 920, Type S, Class 25 or FS TT-S-00230C.
   2. Dissimilar Material Joints: Dymeric" as manufactured by Tremco Manufacturing Company, Cleveland, Ohio 44104; use sealant in conjunction with "Tremco No. 1 Primer", or acceptable substitution.
   3. All Other Joints, Horizontal or Vertical (including exposed control joints): "Sikaflex-la" as manufactured by Sika Chemical Corporation, Lyndhurst, New Jersey 07071 or approved substitution. Color to be selected by architect.

C. Interior Joints:
   1. Joints between walls and countertops or floor base: "G.E. Sanitary Sealant": (mildew resistive silicone rubber sealant) as manufactured by General Electric Company, Waterford, New York 12188 or acceptable substitution.
   2. Joints between hollow metal frames and abutting materials, perimeter of hollow metal frames, joints between dissimilar materials, perimeter of all ceiling grids, intersections of walls and ceiling grids, and the intersections of interior walls and exterior walls: "Pecora AC-20" as manufactured by Pecora Corporation, Harleysville, PA 19438 or "Tremco Acrylic Latex Caulk" or approved substitution.
   3. Acoustical sealant: Synthetic rubber for acoustical sealant for concealed joints.

PART 3 - EXECUTION

25.01 INSTALLATION

A. Examine substrate; report unsatisfactory conditions in writing. Beginning work means acceptance of substrates. Isolate dissimilar metals to prevent galvanic corrosion.

B. Provide sealants in colors as selected from manufacturer's standards.

C. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections. Clean and prime joints, and install bond breakers, backer rods and sealant as recommended by manufacturers.

D. Depth shall equal width up to 1/2" wide; depth shall equal 1/2 width for joints over 1/2" wide or as recommended by manufacturer. Minimum joint width is 1/8" for metal joints and maximum of 3/4" width elsewhere.

E. Cure and protect sealants as directed by manufacturers. Replace or restore damaged sealants. Clean adjacent surfaces to remove spillage.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08111 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special conditions and Technical Specification sections, apply to work of this section.
B. Related Sections
   1. Section 08710 Door Hardware
   2. Section 08800 Glazing
   3. Section 09900 Painting

1.02 SUMMARY

A. Provide steel doors and frames:
   1. Interior steel doors and frames.
   2. Exterior steel doors and frames.

1.03 SUBMITTALS

A. Submit for approval manufacturer's specifications for fabrication and installation, samples, shop drawings, product data and color charts.
B. Complete schedule of doors, frames, hardware and rough openings with throat sizes.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of a single, acceptable manufacturer which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Standards: ANSI/SDI-100, Recommended Specifications for Standard Steel Doors and Frames.

C. Performance Standards:

   1. Fire-Rated Assemblies: NFPA 80, and acceptable testing agency listing.
   2. Thermal-Rated Assemblies at Exterior: ASTM C 236.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.

B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

C. Store doors, window and frames at building site under cover. Place units vertically on minimum 4" high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create a humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4" spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: Amweld Building Products, Ceco Door Products, Curries Co., Mesker Door, Steelcraft or approved equal.

B. Steel Doors:
1. Door Type: Standard steel doors with hollow or composite construction.
2. Interior Doors: ANSI/SDI-100, Level II, heavy-duty, Seamless minimum 18 gauge, cold-rolled steel, 1-3/4 inches thick factory primed.
3. Exterior Doors: ANSI/SDI-100, Level III, extra-heavy-duty, Seamless minimum 16 gauge, galvanized sheet steel, 1-3/4 inches thick.
4. Accessories: Sightproof stationary louvers and glazing stops.
5. Finish: Factory primed and field painted.

C. Steel Frames:
1. Knock Down Steel Frames: Three piece knock-down frame, 2 in face dimension, ½" backdead, fabricate for 1-3/4" doors, designed with integral stop and trim; Drywall slip-on type, 16 gauge cold rolled steel, mitered corners with self-aligning tabs and slots for securely locked corners. Compression jamb anchors with adjustable base anchor system. Frames shall be mortised, reinforced, drilled and tapped to receive specified hardware. When noted or required, provide for frame Underwriters Laboratories, Inc. or Warnock Hersey, Inc. labels for class of opening indicated.
2. Hollow Metal Frames: Welded type, 18 gauge galvanized sheet steel, mitered and welded corners, as manufactured by Fenestra, Erie, PA or approved substitution.
3. Accessories: Door silencers.
4. Finish: Factory primed and field painted: color to be metallic Sherwin Williams's color to match clear anodized aluminum.

2.02 FABRICATION - GENERAL

A. Exposed fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

B. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

PART 3 - EXECUTION

3.01 INSPECTION

A. Installer must examine substrate and conditions under which steel doors and frames are to be installed and notify Contractor in writing of any conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in manner acceptable to Installer.

3.02 INSTALLATION

A. Fabricate work to be rigid, neat and free from seams, defects, dents, warp, buckle, and exposed fasteners. Install doors and frames in compliance with SDI-100, NFPA 80, and requirements of authorities having jurisdiction.

B. Provide thermally improved doors with maximum U-value of 0.24 BTU/hr./sq.ft./degree F (ASTM C236) for all exterior doors and elsewhere as noted.

C. Provide acoustically improved doors with minimum STC of 33 (ASTM E 90 and ASTM E 413) where indicated.

D. Hardware: Prepare doors and frames to receive hardware on door schedule. Provide for 3 silencers on single door frames; 2 on double door frames.

E. Shop Finish: Clean, treat and prime paint all work with rust-inhibiting primer comparable with finish paint specified in Division 9 section.

F. Touch-up damaged coatings and leave ready to receive finish painting.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08211 - WOOD AND PLASTIC DOORS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to work of this section.

1.02 SUMMARY

A. Provide flush wood doors:
   1. Interior solid core flush doors.

B. Provide Impact Traffic Doors:
   1. Impact Traffic Doors.

1.03 SUBMITTALS

A. Submit for approval samples, shop drawings, product data, warranty for each type of wood door, including details of core and edge construction, trim for openings and louvers and finishing specifications for door to receive factory finish.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Quality Standards:
   1. NWWDA I.S. 1A, and AWI Architectural Quality Standards.
   2. ANSI/NWMA I.S.1: “Industry Standard for Wood Flush Doors”, published by National Woodwork Manufacturers Association (NWMA).
   3. AWI Quality Standards Section 1300 “Architectural Flush Doors” of “Architectural Woodwork Quality Standards” published by Architectural Woodwork Institute (AWI). Designations for grade and door construction under types of doors refer to this standard.
   4. NWWDA I.S. 1A, and WIC Manual of Millwork.
   5. Fire Rated Wood Doors: Meeting ASTM E 152 requirements

C. Manufacturer: Obtain doors from a single manufacturer to ensure uniformity in quality of appearance and construction, unless otherwise indicated.

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PART 2 - PRODUCTS

2.01 MATERIALS

A. Interior Solid Core Doors:
   1. Grade: Custom grade.
   2. Construction: birch or oak.
   3. Finish: Transparent finish; solid core flush wood door face, factory finished.

2.02 FABRICATION - GENERAL

A. Openings: Cut and trim openings through doors and panels as shown. Comply with applicable requirements of referenced standards for kind(s) of doors required. Trim openings for lights in non-fire-rated doors with solid wood moldings. Prepare fire rated doors as

required.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installer must examine door frames, after their installation, and doors, prior to their hanging, to verify that frames comply with indicated requirements for type, size, location and swing characteristics and have been installed with plumb jambs and level heads, and to verify that doors are free of defects that could cause their rejection. Installation of doors is not to proceed until unsatisfactory conditions have been corrected.

B. Comply with NWMA I.S. 1A and specified quality standard. Pre-fit doors in accordance with referenced NWMA standards except as otherwise detailed, lock stile beveled to conform to hardware. Apply clear resin sealer on edges after sizing. Pre-machine doors for hardware listed on final schedules. Factory bevel doors.

C. Install doors with not more than 1/8" clearance at top and sides, 1/4" at bottom. Comply with NFPA 80 for rated assemblies.

D. Shop Finish: Sand and provide first coat of finish system specified in painting section. Wrap and protect.

E. Adjust, clean, and protect.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08360 - SECTIONAL OVERHEAD DOORS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide sectional overhead doors:

1. Exterior units.

1.02 SUBMITTALS

A. Submit for approval shop drawings, product data.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: Sectional overhead doors shall be Thermacore AP by Overhead Garage Door Co. or pre-approved equal.

B. Sectional Overhead Doors:

1. Frame and Panels: Galvanized steel frame and insulated steel panels.
2. Panel Profile: Flat.
3. Track Type: Standard track 2” as normally-provided and determined by door size.
4. Operation: Electric door operator.
5. Steel Finish: Factory finished.
6. Windows: Sections shall be furnished with Full-View windows. Quantity and locations of windows shall be per door elevation drawings.

C. Auxiliary Materials:

1. Lifting handles and locking bars.
2. Vision panels shall be full view 1/8” Acrylic Glazing.
3. Automatic reversing control for bottom bar for electrically operated sectional overhead doors.
4. Automatic garage door opener. RMX Commercial Operator (provide 10 remote openers).

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

B. Install assemblies complete with all hardware, anchors, inserts, supports and accessories. Restore damaged finishes and test for proper operation. Clean and protect work from damage.

END OF SECTION

SECTION 08422 – SLIDING AUTOMATIC ENTRANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Special Conditions and Technical Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following types of automatic entrances:
   1. Exterior and interior, single slide and bi-parting, sliding automatic entrances.

B. Related Sections:
   1. Division 7 Sections for caulking to the extent not specified in this section.
   2. Division 8 Section "Aluminum-Framed Entrances and Storefronts" for entrances furnished and installed separately in Division 8 Section.
   3. Division 8 Section "Door Hardware" for hardware to the extent not specified in this Section.
   4. Division 8 Section Glazing for materials and installation requirements of glazing for automatic entrances.
   5. Division 26 Sections for electrical connections provided separately, including conduit and wiring, for power to sliding automatic entrances.

1.3 REFERENCES

A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

B. Underwriters Laboratories (UL):
   1. UL 325 – Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems.

C. American National Standards Institute (ANSI) / Builders' Hardware Manufacturers Association (BHMA):
   1. ANSI/BHMA A156.10: Standard for Power Operated Pedestrian Doors.
   2. ANSI/BHMA A156.5: Standard for Auxiliary Locks and Associated Products

D. American Society for Testing and Materials (ASTM):
   1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
   2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate

E. American Association of Automatic Door Manufacturers (AAADM):

F. National Fire Protection Association (NFPA):
   1. NFPA 101 – Life Safety Code.
   2. NFPA 70 – National Electric Code.

G. International Code Council (ICC):

1. IBC: International Building Code

H. Building Officials and Code Administrators International (BOCA), 1999:

I. International Organization for Standardization (ISO):
1. ISO 9001 - Quality Management Systems

J. National Association of Architectural Metal Manufacturers (NAAMM):
1. Metal Finishes Manual for Architectural and Metal Products.

K. American Architectural Manufacturers Association (AAMA):
1. [AAMA 607.1 - Clear Anodic Finishes for Architectural Aluminum.]
2. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum.
3. AAMA 701 Voluntary Specification for Pile Weatherstripping and Replaceable Fenestration Weatherseals.

1.4 DEFINITIONS

A. Activation Device: Device that, when actuated, sends an electrical signal to the door operator to open the door.

B. Safety Device: Device that prevents a door from opening or closing, as appropriate.

1.5 PERFORMANCE REQUIREMENTS

A. General: Provide automatic entrance door assemblies capable of withstanding loads and thermal movements based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

B. Thermal Movements: Provide automatic entrances that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Operating Range: Minus 30 deg F (Minus 34 deg C) to 130 deg F (54 deg C).

D. Opening-Force Requirements for Egress Doors: Force shall be adjustable; but, not more than 50 lbf (222 N) required to manually set swinging egress door panel(s) in motion.

E. Closing-Force Requirements: Not more than 30 lbf (133 N) required to prevent door from closing.

1.6 SUBMITTALS

A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.

B. Shop Drawings: Include plans, elevations, sections, details, hardware mounting heights, and attachments to other work.

C. Color Samples for selection of factory-applied color finishes.

D. Closeout Submittals:
   1. Owner's Manual.
   2. Warranties.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative, with certificate issued by AAADM, who is trained for installation and maintenance of units required for this Project.

B. Manufacturer Qualifications: A qualified manufacturer with a manufacturing facility certified under ISO 9001.

C. Manufacturer shall have in place a national service dispatch center providing 24 hours a day, 7 days a week, emergency call back service.

D. Certifications: Automatic sliding door systems shall be certified by the manufacturer to meet performance design criteria in accordance with the following standards:
   1. ANSI/BHMA A156.10.
   2. NFPA 101.
   3. UL 325 listed.
   4. IBC 2009
   5. BOCA

E. Source Limitations: Obtain automatic entrance door assemblies through one source from a single manufacturer.

F. Product Options: Drawings indicate sizes, profiles, and dimensional requirements of automatic entrance door assemblies and are based on the specific system indicated. Refer to Division 1 Section "Product Requirements."

G. 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.

H. Emergency-Exit Door Requirements: Comply with requirements of authorities having jurisdiction for automatic entrances serving as a required means of egress.

1.8 PROJECT CONDITIONS

A. Field Measurements: General Contractor shall verify openings to receive automatic entrance door assemblies by field measurements before fabrication and indicate measurements on Shop Drawings.

B. Mounting Surfaces: General Contractor shall verify all surfaces to be plumb, straight and secure; substrates to be of proper dimension and material.

C. Other trades: General Contractor shall advise of any inadequate conditions or equipment.

1.9 COORDINATION

A. Templates: Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing automatic entrances to comply with indicated requirements.

B. Electrical System Roughing-in: Coordinate layout and installation of automatic entrance door assemblies with connections to power supplies.

1.10 WARRANTY

A. Automatic Entrances shall be free of defects in material and workmanship for a period of one (1) year from the date of substantial completion.

B. During the warranty period the Owner shall engage a factory-trained technician to perform service and affect repairs. A safety inspection shall be performed after each adjustment or repair and a completed inspection form shall be submitted to the Owner.

C. During the warranty period all warranty work, including but not limited to emergency service, shall be performed during normal working hours.

PART 2 - PRODUCTS

2.1 AUTOMATIC ENTRANCES

A. Manufacturer: Stanley Access Technologies; Dura-Glide™ **2000**Series sliding automatic entrances.

2.2 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
1. Headers, stiles, rails, and frames: 6063-T6.
2. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
3. Sheet and Plate: ASTM B 209.

B. Sealants and Joint Fillers: Performed under Division 7 Section "Joint Sealants".

2.3 AUTOMATIC ENTRANCE DOOR ASSEMBLIES

A. General: Provide manufacturer's standard automatic entrance door assemblies including doors, sidelights, framing, headers, carrier assemblies, roller tracks, door operators, activation and safety devices, and accessories required for a complete installation.

B. Sliding Automatic Entrances:
1. Single Slide Entrances:
a. Configuration: One sliding leaf and one **full sidelight**
b. Traffic Pattern: Two-way.
c. Emergency Breakaway Capability: **Sliding leaf and sidelight**.
d. Mounting: **Between jambs**

2.4 COMPONENTS

A. Framing Members: Manufacturer's standard extruded aluminum reinforced as required to support imposed loads.
1. Nominal Size: **1 3/4 inch by 6 inch**
2. Concealed Fastening: Framing shall incorporate a concealed fastening pocket, and continuous flush insert cover, extending full length of each framing member.

B. Stile and Rail Doors and Sidelights: Manufacturer's standard 1 ¾ inch (45 mm) thick glazed doors with extruded-aluminum tubular stile and rail members. Incorporate concealed tie-rods that span full length of top and bottom rails.
1. Glazing Stops and Gaskets: Snap-on, extruded-security aluminum stops and preformed gaskets.
2. Stile Design: **Narrow stile; 2 inch (51 mm)** nominal width.

3. Bottom Rail Design: Minimum **10 inch (254 mm)** nominal height.
4. Muntin Bars: **None.**

C. Glazing: Furnished under Division 8 Section Glazing. All Glazing furnished under separate section shall be **1/4 inch (6 mm) tempered interior, 1 inch (25 mm) insulated, hermetically sealed exterior.**

D. Headers: Fabricated from extruded aluminum and extending full width of automatic entrance door units to conceal door operators, carrier assemblies, and roller tracks. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.
1. Mounting: Concealed, with one side of header flush with framing.
2. Capacity: Capable of supporting up to 220 lb (100 kg) per panel, up to four panels, over spans up to 14 feet (4.3 m) without intermediate supports.

E. Carrier Assemblies and Overhead Roller Tracks: Manufacturer's standard carrier assembly that allows vertical adjustment of at least 1/8 inch (3 mm); consisting of urethane with precision steel lubricated ball-bearing wheels, operating on a continuous roller track. Support panels from carrier assembly by load wheels and anti-riser wheels with factory adjusted cantilever and pivot assembly. Minimum two ball-bearing load wheels and two anti-rise rollers for each active leaf. Minimum load wheel diameter shall be 2 1/2 inch (64 mm); minimum anti-rise roller diameter shall be 2 inch (51 mm).

F. Thresholds: Manufacturer's standard thresholds as indicated below:
1. Continuous standard tapered extrusion square by bevel, with bevel to exterior.
2. All thresholds to conform to details and requirements for code compliance.

G. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, non-staining, non-bleeding fasteners and accessories compatible with adjacent materials.

H. Signage: Provide signage in accordance with ANSI/BHMA A156.10.

2.5 DOOR OPERATORS

A. General: Provide door operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, operation under normal traffic load for type of occupancy indicated.

B. Electromechanical Operators: Self-contained overhead unit powered by a minimum of 1/4 horsepower, permanent-magnet DC motor with gear reduction drive, microprocessor controller; and encoder.
1. Operation: Power opening and power closing.
2. Features:
   a. Adjustable opening and closing speeds.
   b. Adjustable back-check and latching.
   c. Adjustable braking.
   d. Adjustable hold-open time between 0 and 30 seconds.
   e. Obstruction recycle.
   f. On/Off switch to control electric power to operator.
   g. Energy conservation switch that reduces door-opening width.
   h. Closed loop speed control with active braking and acceleration.
   i. Adjustable obstruction recycle time delay.
   j. Self adjusting stop position.
   k. Self adjusting closing compression force.
   l. Onboard sensor power supply.
   m. Onboard sensor monitoring.

n. Optional Switch to open/Switch to close operation.

3. Mounting: Concealed.
4. Drive System: Synchronous belt type.

C. Electrical service to door operators shall be provided under Division 16 Electrical. Minimum service to be 120 VAC, 5 amps.

2.6 ELECTRICAL CONTROLS

A. Electrical Control System: Electrical control system shall include a microprocessor controller and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed. Systems utilizing external magnets and magnetic switches are not acceptable.

B. Performance Data: The microprocessor shall collect and store performance data as follows:
1. Counter: A non-resettable counter to track operating cycles.
2. Event Reporting: Unit shall include event and error recording including number of occurrences of events and errors, and cycle count of most recent events and errors.
3. LED Display: Display presenting the current operating state of the controller.

C. Controller Protection: The microprocessor controller shall incorporate the following features to ensure trouble free operation:
1. Automatic Reset Upon Power Up.
2. Main Fuse Protection.
3. Electronic Surge Protection.
4. Internal Power Supply Protection.
5. Resetable sensor supply fuse protection.
6. Motor Protection, over-current protection.

D. Soft Start/Stop: A “soft-start” “soft-stop” motor driving circuit shall be provided for smooth normal opening and recycling.

E. Obstruction Recycle: Provide system to recycle the sliding panels when an obstruction is encountered during the closing cycle. If an obstruction is detected, the system shall search for that object on the next closing cycle by reducing door closing speed prior to the previously encountered obstruction location, and will continue to close in check speed until doors are fully closed, at which time the doors will reset to normal speed. If obstruction is encountered again, the door will come to a full stop. The doors shall remain stopped until obstruction is removed and operate signal is given, resetting the door to normal operation.

F. Programmable Controller: Microprocessor controller shall be programmable and shall be designed for connection to a local configuration tool. Local configuration tool shall be a software driven handheld interface. The following parameters may be adjusted via the configuration tool.
1. Operating speeds and forces as required to meet ANSI/BHMA A156.10.
2. Adjustable and variable features as specified in 2.5, B., 2.
3. Reduced opening position.
4. Fail Safe/Secure control.
5. Firmware update.
6. Trouble Shooting
   a. I/O Status.
   b. Electrical component monitoring including parameter summary.
7. Software for local configuration tool shall be available as a free download from the sliding automatic entrance manufacturer’s internet site. Software shall be compatible with the following operating system platforms: Palm®, Android®, and Windows Mobile®.

2.7 ACTIVATION AND SAFETY DEVICES

A. Motion Sensors: Motion sensors shall be mounted on each side of door header to detect pedestrians in the activating zone, and to provide a signal to open doors in accordance with ANSI/BHMA A156.10. Units shall be programmable for bi-directional or uni-directional operation and shall incorporate K-band microwave frequency to detect all motion in both directions.

B. Presence Sensors: Presence sensors shall be provided to sense people or objects in the threshold safety zone in accordance with ANSI/BHMA A156.10. Units shall be self-contained, fully adjustable, and shall function accordingly with motion sensors provided. The sensor shall be enabled simultaneously with the door-opening signal and shall emit an elliptical shaped infrared presence zone, centered on the doorway threshold line. Presence sensors shall be capable of selectively retuning to adjust for objects which may enter the safety zone; tuning out, or disregarding, the presence of small nuisance objects and not tuning out large objects regardless of the time the object is present in the safety zone. The door shall close only after all sensors detect a clear surveillance field.

C. Photoelectric Beams: In addition to the threshold sensor include a minimum of two (2) doorway holding beams. Photoelectric beams shall be pulsed infrared type, including sender receiver assemblies for recessed mounting. Beams shall be monitored by electrical controls for faults and shall fail safe.

2.8 HARDWARE

A. General: Provide units in sizes and types recommended by automatic entrance door and hardware manufacturers for entrances and uses indicated.

B. Emergency Breakaway Feature: Provide release hardware that allows panel(s) to swing out in direction of egress to full 90 degrees from any position in sliding mode. Maximum force to open panel shall be 50 lbf (222 N) according to ANSI/BHMA A156.10. Interrupt powered operation of panel operator while in breakaway mode.
   1. Emergency breakaway feature shall include at least one adjustable detent device mounted in the top of each breakaway panel to control panel breakaway force.
   2. Limit Arms: Limit arms shall be provided to control swing of sliding or non-sliding panels on break-out; swing shall not exceed 90 degrees. Limit arms shall be spring loaded to prevent shock, and include adjustable friction damping.

C. Deadlocks: Manufacturer's standard deadbolt operated by exterior cylinder and interior thumb turn; with minimum 1 inch (25 mm) long throw bolt; ANSI/BHMA A156.5, Grade 1.
   1. Cylinders: As specified in Division 8 Section "Door Hardware."
   2. Hook Latch: Laminated-steel hook, mortise type, BHMA A156.5, Grade 1.
   3. Two-Point Locking: On bi-parting entrances, provide locking system that incorporates a device in the stile of active door leaves that automatically extends a flush bolt into overhead carrier assembly.

D. Control Switch: Provide manufacturer’s standard header mounted rocker switches and door position switch to allow for full control of the automatic entrance door. Controls to include, but are not limited to:
   1. One-way traffic
   2. Reduced Opening
   3. Open/Closed/Automatic

E. Power Switch: Sliding automatic entrances shall be equipped with a two position On/Off rocker switch to control power to the door.

F. Sliding Weather Stripping: Manufacturer's standard replaceable components complying with AAMA 701; made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

G. Weather Sweeps: Manufacturer's standard adjustable nylon brush sweep mounted to underside of door bottom.

2.9 FABRICATION

A. General: Factory fabricates automatic entrance door assembly components to designs, sizes, and thickness indicated and to comply with indicated standards.
   1. Form aluminum shapes before finishing.
   2. Use concealed fasteners to greatest extent possible.
      a. Where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration, use self-locking devices.
      b. Reinforce members as required to receive fastener threads.

B. Framing: Provide automatic entrances as prefabricated assemblies.
   1. Fabricate tubular and channel frame assemblies with manufacturer's standard mechanical or welded joints. Provide sub-frames and reinforcement as required for a complete system to support required loads.
   2. Perform fabrication operations in manner that prevents damage to exposed finish surfaces.
   3. Form profiles that are sharp, straight, and free of defects or deformations.
   4. Prepare components to receive concealed fasteners and anchor and connection devices.
   5. Fabricate components with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion.

C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

D. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.

E. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated.

F. Hardware: Factory install hardware to the greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site.

2.10 ALUMINUM FINISHES

A. General: Comply with NAAMM Metal Finishes Manual for Architectural and Metal Products for recommendations for applying and designing finishes. Finish designations prefixed by AA comply with system established by Aluminum Association for designing finishes.

B. Class II, Clear Anodic Finish: AA-M12C22A31 Mechanical Finish: as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class II, clear coating 0.40 mils minimum complying with AAMA 611-98, and the following:
   1. AAMA 607.1
   2. Applicator must be fully compliant with all applicable environmental regulations and permits, including wastewater and heavy metal discharge.

PART 3 - EXECUTION

3.1 INSPECTION

A. Examine conditions for compliance with requirements for installation tolerances, header support, and other conditions affecting performance of automatic entrances. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. General: Do not install damaged components. Fit frame joints to produce joints free of burrs and distortion. Rigidly secure non-movement joints.

B. Entrances: Install automatic entrances plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
   1. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
   2. Set headers, carrier assemblies, tracks, operating brackets, and guides level and true to location with anchorage for permanent support.

C. Door Operators: Connect door operators to electrical power distribution system as specified in Division 16 Sections.

D. Glazing: Performed under Division 8 Section "Glazing" in accordance with sliding automatic entrance manufacturer's instructions.

E. Sealants: Comply with requirements specified in Division7 Section "Joint Sealants".

3.3 FIELD QUALITY CONTROL

A. Testing Services: Factory Trained Installer shall test and inspect each automatic entrance door to determine compliance of installed systems with applicable ANSI standards.

3.4 ADJUSTING

A. Adjust door operators, controls, and hardware for smooth and safe operation, for tight closure, and complying with requirements in ANSI/BHMA A156.10.

3.5 CLEANING AND PROTECTION

A. Clean glass and aluminum surfaces promptly after installation. Remove excess glazing and sealant compounds, dirt, and other substances. Repair damaged finish to match original finish. Comply with requirements in Division 8 Section "Glazing", for cleaning and maintaining glass.

END OF SECTION 08422

TECHNICAL SPECIFICATIONS

SECTION 08511 – VINYL WINDOWS

PART 1 - GENERAL

25.02 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to Work of this Section.

25.03 SUMMARY

A. Section includes:
   1. Vinyl Windows and/or doors with hardware.
   2. Glazing
   3. Accessories

25.04 REFERENCES

A. American Architectural Manufacturers Association/Window and Doors Manufacturers Association/Canadian Standards Association (AAMA/WDMA/CSA) 101/I.S.2/A440 - Standard/Specification for Windows, Doors and Unit Skylights

B. AAMA 303 Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors. AAMA 1503.1 Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

C. National Fenestration Rating Council (NFRC)
   3. NFRC 100; Procedure for Determining Fenestration Thermal Properties
   4. NFRC 200; Solar Heat Gain Coefficient and Visible Transmittance

D. American Society of Testing and Materials (ASTM):
   1. ASTM E773 - Test Method for Seal Durability of Sealed Insulating Glass Units.
   2. ASTM E774 - Specification for Seal Durability of Sealed Insulating Glass Units.

25.05 SUBMITTALS

A. Product Data: Submit manufacturer's product data, design data, color charts, actual finish color samples and installation instructions for each material and product used.

B. Shop Drawings: Submit shop drawings including locations, elevations, sections, materials, finishes, and attachments.

25.06 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Use installers with experience on similar projects. Use manufacturer capable of fabricating products that meet or exceed performance requirements as indicated and will provide applicable test reports and calculations. Obtain products from single source manufacturer.
   1. Provide windows capable of complying with requirements indicated, based on testing manufacturer's window that are representative of those specified and that are of test size required by per AAMA/WDMA/CSA 101/I.S.2/A440.
   2. Design pressure: 37 psf (per structural)
   3. U-Factor: 0.27 in accordance with NFRC
   4. Solar Heat Gain Coefficient (SHGC): 0.24 in accordance with NFRC 200.
   5. Visible Transmittance (VT): 0.57 in accordance with NFRC 200.
   6. Air Infiltration: Not to exceed 0.10 cfm/ft² tested in accordance with NFRC 400.
   7. Water Performance: No penetration when tested at 5.25 psf.
   8. Insulating glass units must be manufactured and tested to meet requirements set forth in ASTM E773 and E774.

25.07 DELIVERY AND STORAGE

A. Store windows in a dry location, under cover, protected from weather.

25.08 WARRANTY

A. Manufacturers standard warranty indicating that the window unit will be free from material and workmanship defects from the date of substantial completion for the time periods indicated below:
   1. Window Unit: Lifetime
   2. Glazing:
      a. Insulated Glass: 10 years
      Laminated Glass and Specialty Glazing: 5 years against delamination

PART 2 - PRODUCTS

26.01 MANUFACTURERS

A. Basis of Design Product: JELD-WEN Windows and Doors – Premium Vinyl Windows, Energy Saver Plus

B. Substitutions: Under provisions of Division 01.

26.02 MATERIALS

A. Extruded PVC: AAMA 303; hollow, multi-chambered sections of extruded polyvinyl chloride (PVC), with integral ultraviolet inhibitors. Corners shall be fusion welded and cleaned.

B. Operating Hardware: Aluminum, stainless steel, plated steel, or other noncorroding material compatible with aluminum.
   1. Operating Hardware:
      a. Fixed Units: N/A
   2. Finish: Color to match frame extrusion.

C. Accessories:
   1. Fasteners: Stainless steel, hot-dip galvanized steel, or fluoropolymer coated steel; type best suited to application. Zinc die-cast sash pins disengage sash for easy removal.
   2. Weatherstripping:
      a. Fixed Units: N/A

D. Grilles:
   1. Grilles Between the Glass (GBG)
      a. Material: Made of roll formed aluminum suspended within the air cavity.
      b. Profile: Contour
      c. Pattern: As shown on drawings
      d. Width: 5/8 inch
      e. Finish: Color match window frame extrusion.

E. Glazing:
   1. Strength: Standard – Annealed. Tempered as shown on drawings and as required by code.
   2. Insulated Glass (standard):
      a. Two panes of glass utilizing a continuous roll formed stainless steel and dual seal sealant. Mounted with silicone glazing compound and or glazing tape.
      b. Overall Nominal Thickness: 7/8”
      c. Type: Standard: Type 1- Clear.
      d. Coating Options: Low E on surface 2

F. Finish: To be selected from manufacturers full color range.

PART 3 - EXECUTION

27.01 EXAMINATION

A. Inspect window prior to installation.

B. Inspect rough opening for compliance with window manufacturer recommendations. Verify rough opening conditions are within recommended tolerances.

27.02 INSTALLATION

A. Install windows in accordance with manufacturer’s installation guidelines and

recommendations.

B. Set plumb, level, and rigid, free from warpage. Test and adjust for smooth operation of window. Ensure weep holes are clear of debris for proper drainage.

C. Fill perimeter frame to wall opening cavity with batt insulation. Do not use expansive foam insulators.

D. Apply approved sealant in accordance with Section 07901 - Joint Sealers.

27.03 ADJUSTING, CLEANING, PROTECTION

A. Adjust operating sash and hardware to provide tight fit at contact points and at the weather stripping for smooth operation

B. Clean glass surfaces promptly after installation. Remove excess sealant materials.

C. Initiate and maintain all protection and other precautions required to ensure windows are in acceptable condition at time of substantial completion.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08520 - ALUMINUM INTERIOR WINDOWS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide aluminum windows:

1. Individual interior unit set in drywall wrapped opening.

1.02 SUBMITTALS

A. Submit for approval samples, shop drawings, product data, mock-ups, warranty, test reports, maintenance data.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Testing: Window performance.

C. Performance: Comply with AAMA 101 for grade of window required.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: CRL, Satin Anodized Snap-in Sash with Clips, Item #S010A, DKhardware.com

B. Alternate: Jeld-Wen Premium Aluminum Fixed Window A-500, Clear Anodized, Clear glass, block frame, double glazed with air space.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Fabricate windows to conform to AAMA standards and accept glass specified - ¼" float glass, tempered where required.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

C. Operation: Provide locking units with manual operation; provide pole for out of reach hardware.

D. Restore damaged finishes and test for proper operation. Clean and protect work from damage.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08710 - DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to the work of this section.

1.02 SUMMARY

A. Provide the following:

1. Hardware for swinging doors.

B. Intent of Hardware Groups

Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.

Where items of hardware aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

1.03 SUBMITTALS

A. Submit for approval samples, product data, hardware schedule proposed for use based on Owner's requirements.

B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Hardware for Fire-Rated Openings: NFPA 80, and local requirements.

C. Handicapped Accessibility: ANSI A117.1, AADAG, and local requirements.

D. Materials and Application: ANSI A 156.2 series standards.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: Stanley "Best" 7KC series for interior and exterior/entry doors, all with level handles as per ADA requirements; Stanley, LCN, Von Duprin, Pemko, Reese, Brookline, Ives, Knape, SDC, High Power Security Products(HPSP) and Vogt as indicated.

B. Door Hardware:

1. Quality Level: Commercial medium-duty type.
2. Locksets and Latchsets: Cylinder type, must be medium-duty cylindrical type with 2 3/8 inch backset, or greater as specified, with a ½ inch throw latchbolt .Locksets and latchsets must conform to ANSI A 156.2, Series 4000, Grade 2, and be UL Listed. Locksets and cores to be of the same manufacturer to maintain complete lockset warranty, levers must be zinc material with a minimum wall thickness of .060". #16 style lever, "D" style rose, latch, strike package.
3. Lock Cylinders to be Best 7-pin, interchangeable core lock cylinders, permanent core face must be the same finish as lockset finish. Locks to have solid shank with no opening for access to keyed lever keeper.
4. Keying: Owner's requirements for keying and key control system provide nickel silver keys.
5. Hinges and Butts: Full-mortise type with non-removable pins at exterior doors, 5 knuckle ball-bearing type; Stanley.
6. Closers: Low frequency - LCN 4030/4130 series; High frequency - LCN 4010/4110 series.
7. Exit Devices: Von Duprin.
8. Thresholds: Reese
9. Closet Hardware: Knape and Vogt.
10. Push/Pull Units: Through-bolted type, stainless steel.
11. Hardware Finishes: 626 or as selected by owner - satin chromium plated on exposed surfaces.
12. Double acting doors: LCN 6030 series closer with LCN-CP-150 pivot set.
13. Programmable Access Control: Coordinate with Doorking model 1838 Access Control System. Provide proximity readers at doors indicated on A601. Provide 20 cards minimum. Verify count with owner. Supply fully operational system fully coordinated with exterior gate. Provide additional back-up battery at all exterior doors that receive a proximity reader. Provide magnetic locks at all interior doors receiving proximity readers. Provide proximity reader on pedestal mount, located on Driver side, to control rolling exterior gate. Provide electrical as required by mfg. to all locations as needed.

C. Auxiliary Materials:

1. Wall Stops: Ives.
2. Soundstripping: S-88D by Pemko.
3. Weatherstripping and thresholds: Pemko.
4. Automatic Door Bottoms: Pemko 412 Series

PART 3 - EXECUTION

3.01 INSTALLATION

A. Follow guidelines of DHI "Recommended Locations for Builder's Hardware" and hardware manufacturers' instructions.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

C. Adjust operation, clean and protect.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08711 – POCKET DOOR HARDWARE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to the work of this section.

1.02 SUMMARY

A. Provide the following:
   1. Hardware for pocket doors.

1.03 SUBMITTALS

A. Submit for approval samples, product data, hardware schedule proposed for use based on Owner's requirements.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Hardware for Fire-Rated Openings: NFPA 80, and local requirements.

C. Materials and Application: ANSI A156 series standards.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: Johnson Hardware

B. Door Hardware: Pocket Door Frame Kit
   1. 2x6 construction, doors weighing up to 300 lbs: Johnson 2060 Series Pocket Door Frame Kit
   2. 2x4 construction, doors weighting up to 300 lbs: Johnson 2000 Series Pocket Door Frame Kit

C. Auxiliary Materials:
   1. Pocket door Pull: Johnson 134US15, satin nickel finish
   2. Pocket door Lock: Johnson 153415P1, satin nickel finish
   3. Pocket door Edge Pull: Johnson 150US15, satin nickel finish
   4. Wood door jamb and trim, profile and paint to match metal frames of adjacent rooms.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Follow guidelines of DHI "Recommended Locations for Builder's Hardware" and hardware manufacturers' instructions.

B. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and

with uniform appearance. Coordinate with work of other sections.

C. Adjust operation, clean and protect.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 08800 - GLAZING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide glazing at the following locations:
   1. Exterior aluminum storefront systems and glazed openings.
   2. Interior windows.
   2. Mirrors.
   3. Doors.

1.02 SUBMITTALS

A. Submit for approval samples, shop drawings, product data, mock-ups, warranty, test reports, maintenance data, extra stock.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Testing: Glazing performance.

1.04 WARRANTY

A. Glass Warranties:
   1. Coated Glass: Manufacturer's 5 year warranty.
   2. Mirror Glass: Manufacturer’s 10 year warranty.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: AFG Industries, Cardinal, Libby Owens Ford, Viracon, PPG, Old Castle, AGC or approved equal.

B. Glass:
   1. Primary Glass Products: Clear float glass, tinted float, and wire glass, ASTM C 1036.
   2. Heat-Treated Glass Products: Tempered glass ASTM C 1048.
   3. Mirrors: Silvering and protective coatings.

C. Glazing Accessories:
   1. Glazing frame and gaskets: Southwest Aluminum Systems, SW-450 series, M-121 screw applied.
   2. Elastomeric glazing sealants.
   3. Preformed glazing tapes.
   4. Glazing gaskets.
   5. Setting blocks and compressible filler rods.
   6. Spacers per local energy code requirements.
   7. Mirror adhesive.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Inspect framing and report unsatisfactory conditions in writing.

B. Comply with FGMA "Glazing Manual" and manufacturers instructions and recommendations. Use manufacturer's recommended spacers, blocks, primers, sealers, gaskets and accessories.

C. Install glass with uniformity of pattern, draw, bow and roller marks.

D. Install sealants to provide complete wetting and bond and to create a substantial wash away from glass.

E. Set mirrors on stainless steel clips and adhere to wall with mirror adhesive.

F. Remove and replace damaged glass and glazing. Wash, polish and protect all glass supplied under this section.

3.02 SCHEDULE

A. Glazing Schedule:
   1. Exterior Windows: 1 inch Insulated glazing system, 1/4 inch tinted glazing -1/2 inch air space-1/4 inch clear glazing, low-E.
   2. Interior Windows: 1/4 inch clear, tempered where required by code.
   3. Mirrors: 1/4 inch (6mm) plate glass.
   4. Doors: Tempered glass.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 09250 - GYPSUM BOARD ASSEMBLIES

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to the work of this section.

1.02 SUMMARY

A. Provide gypsum board assemblies:
   1. Interior walls, partitions, and ceilings.
   2. Non-load bearing steel framing members for gypsum board assemblies.
   3. Installation of access panels in gypsum board assemblies.

B. Gypsum Board Attachment:
   1. Gypsum board screw-attached to stud framing and furring.

1.03 SUBMITTALS

A. Submit for approval product data and installation instructions for each gypsum drywall component.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Obtain gypsum board products from a single manufacturer.

C. Tolerances: Not more than 1/16 inch difference in true plane at joints between adjacent boards before finishing. After finishing, joints shall not be visible. Not more than 1/8 inch in 10 feet deviation from true plane, plumb, level and proper relation to adjacent surfaces in finished work.

D. Fire Resistance for Fire Rated Assemblies: ASTM E 119.

E. Performance: Fire, structural, and seismic performance meeting requirements of building code and local authorities.

1.05 DELIVERY, STORAGE AND HANDLING

A. Store materials inside under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

1.06 EXISTING PROJECT CONDITIONS

A. Comply with requirements of referenced gypsum board application standards and recommendations of gypsum board manufacturer, for environmental conditions before, during and after application of gypsum board.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers of Gypsum Board: All materials specified herein except as noted are based on United States Gypsum Products. Products manufactured by American Gypsum, Georgia-Pacific Corp., National Gypsum Co. are acceptable substitutions.

B. Steel Framing for Walls and Partitions
   1. Sizes and Framing: Not less than required to comply with ASTM C 754 under the following maximum deflection and lateral loading conditions:
      a. Maximum Deflection: L/240 at 5 lbs per square foot.
   2. Protective Coating: Manufacturer's standard corrosion-resistant coating.
   3. Steel Studs and Runners: ASTM C 645, with flange edges of studs bent back 90 degrees and doubled over to form 3/16-inch wide minimum lip.

C. Gypsum Board:
   1. Gypsum Wallboard: ASTM C 36, Type "X", 5/8 inch thick as indicated, with tapered edges.
   2. Water-Resistant Gypsum Backing Board: Densarmor Plus Interior Guard (GP Gypsum), 5/8" inch thick, with tapered edges. – Use at locations where hose bib is located and intake garage.
   3. Metal Furring Channels: roll formed, hat shaped sections of min. 25 gage galvanized steel (7/8" x 2-3/4" U.S.G. DWC - 25)
   4. Fasteners: ASTM C 646, corrosion-resistant self-tapping buglehead spiral-thread type screws, Type W, minimum 1" long except 1-5/8" for double layer walls, lengths to penetrate at lease 3/8".
   5. Joint compounds and Tape:
      a. USG CF ready mix types.
      b. USG Durabond 90.
      c. USG Perf-A-Tape reinforcing tape.

D. Cementitious Backer Units: Use behind tiled walls.
   1. Type: ANSI A 118.9, cement-coated Portland cement panels. (USG Durock or equal)
   2. Thickness: 5/8 inch nominal.

D. Tectum: Use at ceiling at kennels.
   1. Type: Tectum NS 1 ½"
   2. Thickness: 1 1/2 inch nominal.

E. Metal Trim Accessories:
   1. Corner Bead: Dur-A-Bead or approved substitution metal corner reinforcement, attached with nails or screws.
   2. Casing Beads: Number 200 series.
   3. Expansion Control Joint: Number 093.
   4. Reveal Type Trim: Number 400 series.
   5. Edge Protection: Number 800 series.

F. Auxiliary Materials:
   1. Fastening adhesive.
   2. Concealed acoustical sealant.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install wood framing in compliance with Section 06100 - Rough Carpentry. Install with tolerances necessary to produce substrate for gypsum board assemblies with tolerances specified. Include blocking for items such as railings, grab bars, casework, toilet accessories and similar items.

B. Install steel framing to comply with ASTM C 754 and with ASTM C 840 requirements that apply to framing installation.

C. Install runners (tracks) at floors, ceilings and structural walls and columns where gypsum board stud assemblies abut other construction. Where studs are installed directly against exterior walls, install asphalt felt strips between studs and wall.

D. Install each steel framing and furring member so that fastening surfaces do not vary more than 1/8-inch from the plane formed by the faces of adjacent framing.

E. Install steel studs so that flanges point in the same direction and so that leading edges of ends of each gypsum board can be attached to open (unsupported) edges of stud flanges first.

F. Install gypsum board assemblies in compliance with ASTM C 840 and GA 216, Recommended Specifications for the Application and Finishing of Gypsum Board. Install gypsum board assemblies true, plumb, level and in proper relation to adjacent surfaces. Provide continuous vapor retarder at exterior walls.

G. Provide fire-rated systems where indicated and where required by authorities having jurisdiction.

H. Install boards vertically. Do not allow butt-to-butt joints and joints that do not fall over framing members.

I. Provide insulation full height and thickness in partitions as indicated on drawings.

J. Provide acoustical sealant at both faces at top and bottom runner tracks, wall perimeters, openings, expansion and control joints.

K. Install trim and Level 3, 3-coat joint treatment in strict compliance with manufacturer's instructions and recommendations on all walls and ceilings. Joint treatment is required at all fasteners and edges between boards. Fill all surface defects. Sand between and after joint treatment coatings and leave ready for finish painting or wall treatment.

L. Texturing: All gypsum wall board (walls and ceilings) to receive paint shall be texture coated, except walls to receive vinyl wall covering. Coordinate with Owner for locations of walls to receive vinyl wall covering. Finish these walls with “slick” flat finish drywall taping. Mix and apply materials evenly to achieve a uniform “orange peel” texture. Machine apply coating. Roller or trowel application will not be acceptable. Uneven, blotched or irregular texture will be completely removed and re-textured.’

Provide Owner with Bid Alternate for smooth finish at painted interior walls.

END OF SECTION

SECTION 09300 - TILE

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to work of this section.

1.02 SUMMARY

A. Interior Tile:

1. Porcelain tile wall tile.
2. Porcelain tile base (bullnose profile).
3. Ceramic wall tile
4. Glass wall tile

1.03 SUBMITTALS

A. Submit for approval samples, product data.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Tile: ANSI A 137.1.

C. Source of Materials: Provide materials obtained from one source for each type and color of tile, grout and setting materials.

D. Tile Setting Materials: ANSI 118 series standard specifications.

E. Tile Installation: ANSI 108 series standard specifications and Tile Council of America, Handbook for Ceramic Tile Installation.

1.05 PRE-INSTALLATION CONFERENCE

E. Convene one week prior to commencing work. Tile Subcontractor, Setting Materials Rep, and Architectural Rep to be present.

1.06 WARRANTY

E. Contractor warrants work of this Section to be in accordance with Contract Documents and free from faults and defects in materials and workmanship for a period of 5 years. This special warranty extends period of limitations contained in General Conditions. Countersign warranty by installer and manufacturer.

B. Manufacturer of installation systems, adhesives, grouts and mortars shall provide a comprehensive non pro-rated written five (5) year warrantee against defective products which covers replacement materials and labor costs for demolition, tile accessories, and installation systems.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers of Tile: As noted on interior sheets

B. Manufacturers of Setting Materials: Mapei.

C. Floor tile:

1. Type: Porcelain – through body or with glazed top.
2. Size: 12 by 12 inches or larger, as selected by architect.
3. Thickness: ½ inch nominal.
4. Straight edges

D. Wall tile:

1. Type: Porcelain, ceramic, glass.
2. Size: 1X 1 inches and larger, as selected by architect.
3. Thickness: ½ inch nominal.

D. Tile Accessories:

1. Floor Tile: coordinating porcelain tile base with bullnose profile, size selected by architect and as manufactured by floor tile manufacturer.
2. Wall Tile: coordinating trim units to complete edges where necessary.
3. Finishing edge at exterior corners of tile installation: Schluter Systems, Schluter – Rondec, Anodized Aluminum finish.

E. Setting Materials:

1. Latex-Portland Cement Mortar complying with ANSI A118.4 and equal to MAPEI Kerabond powder gauged with MAPEI Keralastic Thin Set Mortar Additive as manufactured by MAPEI, Inc.

F. Grout:

1. MAPEI Flexcolor CQ stain free grout, color per interior sheets at floors and walls.

G. Elastomeric Sealants:

1. One-part mildew-resistant silicone sealant for non-traffic areas.

H. Waterproofing membrane:

1. Ceramic tile and setting materials do not constitute a waterproof barrier and should not be considered as a substitute for a waterproof membrane. Install a waterproofing membrane under tile at all wet area applications – walls, floors (if above wood construction, or above occupied space) showers, animal holding runs, etc. - as noted in drawings.

2. Install Anti-fracture membrane at control joints to eliminate the transfer of cracking through the tile/grout.

3. Waterproofing/Anti-fracture membrane to be thin, cold applied, single component liquid, load bearing and non-toxic. Reinforcing fabric to be non-woven rot-proof specifically intended for waterproof membrane. Materials to be non-toxic, non-flammable, and non-

hazardous during storage, mixing, application and when cured. Equal to MAPEI Mapelastic HPG Waterproof Membrane manufactured by MAPEI, Inc. and meeting following physical requirements:

a. Water Permeability(at 30ft.hydro/0.9 atmos/91.2kPa)	Nil
b. Elongation (ASTM D-412)	153%
c. Thickness	40 mils (1 mm)
d. Bond strength to concrete (ASTM D-4541)	>175 psi
e. Service Rating (TCA)	Extra Heavy Duty

4. Anti-Fracture membrane: MAPEI Mapelastic 400 Waterproofing and Anti-Fracture Membrane manufactured by MAPEI, Inc.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with Tile Council of America and ANSI Standard Specifications for Installation for substrate and installation required. Comply with manufacturer's instructions and recommendations.

B. Lay tile in grid pattern with alignment grids. Layout to provide uniform joint widths and to minimize cutting; do not use less than 1/2 tile units. Maximum joint width 1/8” at porcelain tile floor, coordinating porcelain tile base, ceramic and glass wall tile.

C. Provide sealant joints where recommended by TCA and approved by Architect.

D. Grout and cure, clean and protect.

END OF SECTION

SECTION 09512 - ACOUSTICAL TILE CEILINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to work of this section.

1.02 SUMMARY

A. Provide acoustical lay-in tile ceilings, trim, and exposed metal suspension system.

1.03 SUBMITTALS

A. Submit for approval samples, product data, installation instructions. Include manufacturer's recommendations for cleaning and refinishing acoustical units, including precautions against materials and methods which may be detrimental to finishes and acoustical performances.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Performance: Fire, structural, and seismic performance meeting requirements of building code and local authorities. Acoustical performance based on project requirements.

C. Coordination of Work: coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by or penetrating through ceilings including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition system (if any).

D. Refer to Reflected Ceiling plan, Mechanical, Plumbing, Fire Sprinkler, Electrical and Special Systems Plans, ceiling details and notes. Notify GC and Architect of any discrepancies and/or conflicts and request direction prior to start of work.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturer: Armstrong Ceiling Systems.

B. Type AT-1.
   1. Size: 24 by 24 inches by 3/4 inch.
   2. Edge Detail: Angled Tegular.
   3. Pattern: Armstrong Cirrus Tile #584 White.

C. Type AT-2:
   1. Size: 24 by 48 inches by 3/4 inch.
   2. Edge Detail: Square Lay-In
   3. Pattern: Armstrong Ultima Tile #1913 White.

D. Type AT-3
   1. Size 24 by 48 inches by 3/4 inch.
   2. Edge Detail: Square Lay-in

3. Pattern: Armstrong Clean Room VL non perforated Tile #870 White.

E. Direct-Hung Suspension Systems, Non-Fire-Resistance Rated:
   1. Type: 15/16: face dimension, Exposed Tee, hot dipped galvanized steel, intermediate duty classification, G90 galvanizing, ASTM C 635.
   2. Suspension System Accessories: Attachment devices and hangers, ASTM C 635. Molding – 7/8" and 2" angle wall moldings.
   3. Style: Armstrong Prelude XL; 15/16" Tee System; Color Flat White.
   4. Provide slack wire for light fixtures (minimum 2 per fixture).
   5. Provide slack wires for HVAC diffusers and grilles if required

F. Auxiliary Materials:
   1. Edge molding and trim.
   2. Hold-down clips and impact clips.
   3. Concealed acoustical sealant.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install materials and suspension systems in accordance with manufacturer's instructions and recommendations, and ASTM C 636. Coordinate installation with location of mechanical and electrical work to ensure proper locations.

B. Refer to Reflected Ceiling Plan, Mechanical, Electrical and Plumbing plans, Fire Sprinkler drawings, if any, and Special Systems Plan (Med gas), as well as architectural ceiling installation detail drawings prior to starting work. Note any discrepancies and advise contractor if installation cannot be as depicted.

C. Inspect jobsite prior to installation. Check wall alignment and straightness for conditions that would prevent a professional level of workmanship. Bring any such conditions to the attention of the general contractor and/or the architect. If an acceptable installation is not possible do not begin grid install in those areas until the condition is rectified.

D. Level ceiling to within 1/8" in 10' in both directions (this requirement supersedes ASTM C636). Scribe and cut panels to fit accurately. Measure and layout to avoid less than half panel units.

E. Install angle wall molding level to within 1/8" in 10'. Use specified 7/8" angle molding unless project is located in a seismic zone. Follow manufactures written instructions for seismic-rated installations. If minor inconsistencies in wall flatness create gaps of 1/16" or greater between wall surface and molding apply a small bead of paintable latex caulk, strike flush with molding, do not cove.

F. In non-seismic installations use 2" angle wall molding to conceal wall deformations only if approved by the site superintendent. Coordinate locations prior to installation.

G. Arrange acoustical units and orient directionally-patterned units (if any) with pattern running in one direction.

H. Plan layout to allow only one device per tile. Coordinate with mechanical trades.

H. Adjust, clean, and touch-up all system components.

I. Provide one full carton, wrapped and labeled of full sized maintenance stock of new material

for each tile type installed.

J. Provide and install cut-out dimensions in ceiling tile for all trades surface mounted and though tile mounted equipment and devices. Acoustical tile installation contractor is responsible for the coordination with electrical and mechanical contractors and final installation of all grid and tile.

K. Electrical contractor to finish tie-off of slack wire to fixtures.

END OF SECTION

SECTION 09678 - RESILIENT WALL BASE AND ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY

A. Provide resilient wall base, resilient stair accessories.

1.02 SUBMITTALS

A. Submit for approval samples, product data, extra stock.

1.03 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Performance: Fire performance meeting requirements of building code and local authorities.

C. Provide materials and adhesives which do not contain asbestos.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Manufacturers: Johnsonite, Roppe or approved equal. Color to be selected by Architect.

B. Resilient Wall Base:
1. Rubber Wall Base: FS SS-W-40, Type I, [0.125 inches] thick.
2. Height: [4 inches].

C. Resilient Stair Accessories:
1. Rubber Stair Treads: FS RR-T-650, Composition A, [0.125 inches] thick.
2. Rubber Stair Risers.

E. Installation Accessories:
1. Concrete Slab Primer: Nonstaining type.
2. Trowelable Underlayments and Patching Compounds: Latex-modified, Portland-cement-based formulation.
3. Stair Tread Nose Filler: Two-part epoxy compound.
4. Adhesives: Water-resistant type.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Comply with manufacturer's instructions and recommendations. Install in proper relation to adjacent work.

B. Install base and accessories to minimize joints. Install base with joints as far from corners as practical.

C. Clean, polish, and protect.

END OF SECTION

SECTION 09706 – Decorative Flake Epoxy Floor Finish System

PART 1 - GENERAL

1.01 WORK INCLUDED

Provide labor, equipment and materials to complete coatings work as indicated on the drawings and as specified herein. **Note: All 4" cove base noted as epoxy on finish schedule will be colored epoxy top coat only. Run top coat only 4" up wall.**

1.02 RELATED SECTIONS

A. Specified elsewhere:

a. Section 03001 – Concrete
b. Section 03540 – Cementitious underlayments

1.03 QUALITY ASSURANCE

A. References: Cited Standards are incorporated herein by reference and govern the work:

a. Pamphlet No. 03732, International Concrete Repair Institute (Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings and Polymer Overlays.

B. Single Source Responsibility: Obtain primary resinous materials including hardening agents, finish or sealing coats from a single manufacturer with not less than 5 years of successful experience in manufacturing and installing the principal materials described in this section. Provide secondary materials only of type and from a source recommended by the manufacturer of the primary material.

C. Contractor Experience: Contractor must furnish the following proof of experience.

a. Letter of training from the Approved Material manufacturer stating that contractor has been an approved installer for a minimum of 5 years and has been successful in the installation of the manufacturers Approved Materials on ten (10) projects of similar complexity and size as this project.
b. List of ten (10) projects using the manufacturers Approved Materials on projects of similar complexity and size as this project including Owner's names, current phone number and list of material used on project.
c. Submit resume of the key person(s) who will be performing the actual work using the manufacturers Approved Materials and list a minimum of five (5) projects with different Owners including Owner's names, current phone number, and data sheets on the material used on project.
d. Note: 8 days prior to bid due date all installers must submit the above requirements to the Architect for qualification review.
e. The city has the ability to select/not select an installer based on content of references provided.

D. Sampling of Material:

a. When directed by Architect/Engineer, obtain test samples from material stored at the project site or source of supply.
b. Select samples at random from sealed containers

E. Approved Manufacturer Supervision:

a. A representative of the materials manufacturer must be present on site for the duration of the preparation and for all phases of the installation of the specified coating materials.

b. Manufacturer Field Services: The installer of the coating system shall contact the material manufacturer during the bidding phase of the project and shall include in the cost of his work, the cost of a manufacturer's field engineering person to be present throughout the duration of all aspects of the work specified in this section as follows:

c. Material Manufacturer shall be responsible for the review of the project conditions that may impact product performance before product installation, including but not limited to project climate, acceptable temperature of substrate and air, acceptable humidity levels of air, acceptable moisture content of substrates to be coated, surface preparation, and all other conditions that are necessary for optimum product performance. The manufacturer's field engineer shall document and verify that all conditions are acceptable prior to commencement of work.

d. The manufacturer's field representative shall submit through the Contractor written approvals of the proposed coating system including manufacturer's recommended applicator, manufacturer's recommended application procedures, and manufacturer's recommended surface preparation.

e. The manufacturer is solely liable for any warranty claims resulting from product failure, whether caused by defective product or improper installation for a period of 5 years. See warranty section: 3.06 for clarification.

f. The materials manufacturer's representative must be present on site for the entire installation which includes but not limited to the pre-installation site conditions evaluation, surface preparation and all phases of the installation of the specified resinous coating system.

g. Installer's bid shall include the cost of the manufacturer's full time field services as a line item in the bid proposal as specified above. Failure to include manufacturer's field services as specified will result in the bid being rejected.

Note: 8 days prior to bid due date all installers must submit the above requirements to the Architect for qualification review. Manufacturer must provide design criteria as specified and must provide the required field services.

1.04 SUBMITTALS

A. Submit three (3) copies of product literature indicating technical data.

B. Submit three (3) copies of product installation and application guide.

C. Submit three (3) samples of product finished on 12 inch by 12 inch (12" x 12") substrate on which product is to be applied.

D. Submit three (3) copies of manufacturer's Material Safety Data Sheets.

E. Submit list of ten (10) projects using the manufacturers Approved Materials on projects of similar complexity and size as this project including Owner's names, current phone number and list of material used on project.

F. Manufacturer's Certification: All acceptable bids must include with the price of their work, a letter of training certification from the manufacturer stating that the installer has been trained by the manufacturer in the specified system. Failure to include the proper

manufacturer's letter of certification with installer's bid proposal will result in the bid being rejected.

G. Submit a copy of the manufacturer's warranty stating that the manufacturer is solely responsible for the acceptable installation of the specified coating systems. Letter must show that the manufacturer alone will cover all material and labor replacement for any project failures due to product performance or its improper installation as further clarified in section 3.03. Failure to include the proper manufacturer's warranty with installer's bid proposal will result in the bid being rejected.

H. Manufacturer's Field Services: Submit a letter from the manufacturer stating that the manufacturer has agreed to and will provide the field services as specified in section 1.03 above.

Note: Bidders are encouraged to submit materials that meet the Basis of Design. In order to have a material accepted as an Approved Material for the work outlined herein the items listed in this section 1.04 A-E must be received by the architect for evaluation and approval no less than 8 days prior to the original published bid due date. Approved Materials will be by Addendum only. Submittals circumventing this process will not be approved and will not be acceptable for inclusion in this project.

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of materials:

a. Deliver materials to project site with labels legible and intact.

B. Storage of materials:

a. Store only acceptable project materials on site.
b. Store in suitable location convenient to progress of work.
c. Comply with health and fire regulations.
d. Storage temperature shall be between 60 F and 90 F or such other ambient temperature conditions as may be specifically recommended by product manufacturer.

1.06 JOB CONDITIONS

A. Environmental requirements

a. Comply with manufacturer's recommendations as to environmental conditions under which coating systems can be applied. Surfaces to be coated and ambient air temperature shall be between 65 F and 75 F. Do not apply coatings at temperatures beyond those limits stated in the manufacturer's technical data sheet unless given written permission by the manufacturer.
b. Do not apply coatings in areas where dust or other airborne particulate matter is being generated.

B. Protection:

a. Cover or otherwise protect finished work of other trades and surfaces not being coated concurrently or not to be coated.

PART 2 - PRODUCTS

2.01 MATERIALS

TECHNICAL SPECIFICATIONS

A. Basis of Design:

1. RES-1 Flake Broadcast Floor System as manufactured by Prime Coat Coating Systems Waukegan, IL (877-362-5111) PC Prime Cast 2611 (products include PC 320, PCA 327, PC 339, PC 440, PC 498) with 4 inch rolled radius integrated cove base where delineated on finish schedule.
2. RES-2 Flake Broadcast Floor System as manufactured by Prime Coat Coating Systems Waukegan, IL (877-362-5111) PC Prime Cast 2611 (products include PC 320, PCA 327, PC 339, PC 500, PC 498) with 4 inch rolled radius integrated cove base where delineated on finish schedule.

B. Performance Criteria:

1. Resinous flooring shall withstand chemical attack by agents provided in writing by Owner, in temperatures and concentrations stated therein.
2. Resinous Flooring shall be composed of 100% solids plural components epoxy.
3. Finish Coats shall be manufacturer's highest grade ultra clear UV resistant epoxy formulation and must be tested per ASTM G154-06 and show no color or gloss variation between the unexposed sample and the tested sample after 150 hours of exposure.
4. In addition to anti-microbials mixed in with the final topcoat, the finished system must have additional pathogen protection installed that will minimize the risk of pathogen spread on floor surfaces. This product must have been tested to kill MRSA, Staph and other similar infectious diseases.
5. Physical Performance Characteristics:
   a. Compressive Strength: 11,800 psi after 7 days (ASTM D-695)
   b. Tensile Strength: 7,100 psi (ASTM D-638)
   c. Tensile Elongation: 10.7% (ASTM D-638)
   d. Flexural Strength: 12,500 psi (ASTM D-790)
   e. Flexural Modulus of Elasticity: 3.7 x 105psi (ASTM D-790)
   f. Hardness: 70-75 (ASTM D-2240/Shore D Durometer)
   g. Bond Strength: >400 psi (100% concrete failure)
   h. Indentation: No indentation (MIL-D-3134F)
   i. Abrasion Resistance: 0.04 gm max weight loss (ASTM D-4060, Taber
   j. Flammability: Self extinguishing (ASTM D-635)
   k. Water Absorption: 0.1% (ASTM C-413)
   l. Heat Resistance Limitation: 140º F/60º C (for continuous exposure) 200º F/ 93ºC (for intermittent spills)

C. Other acceptable manufacturers:
   a. Sika Corp. – Sikafloor® Decoflake 40 System Sheet Edition 6.5.2009, Sikafloor® Decoflake 40315
   b. Stonhard – (Indoor) Stontec ERF at 2mm total thickness a three component undercoat, brightly colored, flake broadcast, and one application of a two-component, high performance, clear epoxy sealer and a polyurethane finish coat in a matte sheen as manufactured and installed by Stonhard. (exterior) Stontec UTF, Confirm inclusion of 25mil body coat, and broadcast quartz into primer increasing bond strength. Contact: Geremy Mendelson, 619-886-4265 gmendelson@stonhard.com
   c. Durachip
   d. NeoFlake

Note: The above listed acceptable manufactures must meet all requirements as listed for basis of design system including but not limited to the following:

1. Product composition
2. Product performance criteria
3. Number of coats and coating overall thickness
4. Warranty requirements as specified in sections 1.04 and 3.06
5. Manufacturer's responsibilities as specified in section 1.03.

Note: Inclusion as an acceptable manufacturer does not preclude products or installer will be accepted. All acceptable manufacturers must meet the above design criteria, supply a certified and factory trained skilled installer, solely hold and bear the responsibility of the specified warranty and supply the manufacturer's field services as specified.

B. Selected high performance floor coating system shall be applied over cured concrete slabs on grade, prepared to a profile as recommended by the selected manufacturer. Prior to system application, the concrete surface shall be free of laitance, form release agents, curing agents, oil, grease and other contaminants. Surface shall be free of fins, projections, and loosely adhering concrete, dirt and dust particles.

C. Include on Labels of Containers:

a. Manufacturer's name.
b. Product name.
c. Product number.
d. Color.
e. Instructions for reducing, where applicable.
f. Component description

2.02 COLORS

A. Colors shall be selected by the Architect/Engineer from Manufacturer's standard palette of not less than eight (8) flake blends.

2.03 MIXING

A. Accomplish job mixing and application only when acceptable to the Architect.

B. Mix components only in containers furnished by the manufacturer.

C. Proportioning of two-part and three-part coatings shall be in strict accordance with methods recommended by the manufacturer.

D. All coats shall be mixed using a variable speed drill with a PS Jiffyblade. Parts A and B shall be mixed a minimum of two minutes. Ensure full blending of both parts with all material measured into the mixing container. Apply the mixed material within the pot life and temperatures recommended by the manufacturer.

E. For all mixing operations, the flooring system components shall be considered as hazardous materials. Read and observe container label warnings and Material Safety Data Sheets for health and safety information prior to starting mixing operations.

F. Do not reseal mixed material. Permit final chemical set to occur in the container and when set has been achieved; dispose of hardened material by legal means.

G. Do not apply any material that has exceeded shelf and pot life as determined by manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examine surfaces scheduled to receive coating for conditions that will adversely affect execution, permanence or quality of work and which cannot be put into an acceptable condition through preparatory work as included in 3.02. PREPARATION OF SURFACES.

B. Notify Owner's agent immediately upon determination that surfaces scheduled to receive coating are unacceptable for proper adhesion or subsequent performance.

C. Do not proceed with surface preparation or coating application until conditions are suitable.

3.02 PREPARATION OF SURFACES

A. New concrete floor slabs on grade.

a. Smooth troweled dense finish concrete, which shall have been properly cured not less than twenty-eight (28) days after placement.
b. Employ a radio frequency moisture meter to determine that residual un-combined moisture content of concrete slab is less than five (5) percent by weight.
c. Conduct ASTM F 2170 relative humidity testing. Do not apply high performance floor coatings to floor slabs that exceed the maximum allowance of RH in the slab as tested per ASTM F-2170 unless directed in writing by the manufacturer or if approved moisture primer is first applied
d. Diamond grind or shot blast to profile all concrete floor surfaces scheduled to receive high performance floor coatings to a classification of CSP-3.
e. Remove and legally dispose of all debris and contaminants produced by the shot blasting process. Steel media resulting from the shot blasted floor slab surface shall be removed from cracks, slab edges, construction joints, and corners by magnets, magnetic broom, air blast, vacuum, or stiff bristle broom.

B. Old concrete floor slabs on grade.

a. Employ a radio frequency moisture meter to determine that residual un-combined moisture content of concrete slab is less than five (5) percent by weight.
b. Conduct ASTM F 2170 relative humidity test. Do not apply high performance floor coatings to floor slabs that exceed the maximum allowance of RH in the slab as tested per ASTM F-2170 unless directed in writing by the manufacturer or if approved moisture primer is first applied
c. Diamond grind or shot blast to profile all concrete floor surfaces scheduled to receive high performance floor coatings to a classification of CSP-3.
d. Where visual inspection of shot blasted surface indicates that oil-based penetration of the surface has occurred, the stained areas shall be treated with a 15% by volume solution of aqueous tri-sodium phosphate (TSP) or other proprietary de-greasing agent. Rinse and dry all floor surfaces scheduled to receive high performance floor system finish prior to commencement of prime coat application.
e. Remove and legally dispose of all debris and contaminants produced by the shot blasting process. Steel media resulting from the shot blasted floor slab surface shall be removed from cracks, slab edges, construction joints, and corners by magnets, magnetic broom, air blast, vacuum, or stiff bristle broom.

3.03 APPLICATION

A. RES-1 Interior Surfaces:

a. Do not apply initial coating until moisture content of surface is within limitations recommended by coating manufacturer and never install coatings when the substrate temperature is less than 5 degrees above dew point unless specifically approved, in writing, by the manufacturer.
b. Apply base coat PC 320 with PC 339 at 10 mils.
c. Immediately broadcast PCA 327 flake into the wet resin until rejection.
d. When the base coat has cured scrape off loose flakes and then apply one full coat of PC 440 at 10-12 mils to completely encapsulate decorative flakes.
e. When top coat is fully cured apply a second full coat of PC 440 at 8-10 mils. Total top coats shall be a minimum of 20 mils.
f. Once the 2nd top coat has hardened apply two coats of PC 498 Path-O-Cide.
g. The finished floor must meet ADA specifications for this project. Use a Sullmair FSC 2000-1346 Floor tester to validate ADA requirements. Please note to achieve the required ADA coefficient of friction, additional topcoat material or anti-slip additives may be necessary.
h. Keep all application equipment free from contaminates and suitable for the finish required.
i. Comply with recommendations of manufacturer of high performance floor system for drying time between prime and succeeding coats.
j. Finished product shall be uniform in color and texture and free of skipped or missed areas.
k. Where walls and floors abut and are both of a resinous material, obtain all coating materials from a single manufacture being sure to meet all re-coat windows to insure a seamless installation.

B. Installation of RES-2 Exterior Surfaces only

a. Do not apply initial coating until moisture content of surface is within limitations recommended by coating manufacturer and never install coatings when the substrate temperature is less than 5 degrees above dew point unless specifically approved, in writing, by the manufacturer.
b. Apply base coat PC 320 with PC 339 at 10 mils.
c. Immediately broadcast PCA 327 flake into the wet resin until rejection.
d. When the base coat has cured scrape off loose flakes and then apply one full coat of PC 500 at 10-12 mils to completely encapsulate decorative flakes.
e. When top coat is fully cured apply a second full coat of PC 500 at 8-10 mils. Total top coats shall be a minimum of 20 mils.
f. Once the 2nd top coat has hardened apply two coats of PC 498 Path-O-Cide.
g. The finished floor must meet ADA specifications for this project. Use a Sullmair FSC 2000-1346 Floor tester to validate ADA requirements. Please note to achieve the required ADA coefficient of friction, additional topcoat material or anti-slip additives may be necessary.
h. Keep all application equipment free from contaminates and suitable for the finish required.
i. Comply with recommendations of manufacturer of high performance floor system for drying time between prime and succeeding coats.
j. Finished product shall be uniform in color and texture and free of skipped or missed areas.
k. Where walls and floors abut and are both of a resinous material, obtain all coating materials from a single manufacture being sure to meet all re-coat windows to insure a seamless installation.

C. INSPECTIONS

a. Architect shall inspect all work of this section for procedural, visual and textural acceptability.
b. Said inspection of finished surfaces will be made by the Architect/Engineer within twenty-four (24) hours of glazing coat application.
c. Refinish areas where portion of finish has been damaged or is not acceptable.
d. Core sampling shall be performed at the owner's discretion, direction and expense. Samples shall be based on 1 sample per 1000 square feet of flooring.

D. FINISHED WORK
   a. Damage to finished surfaces caused by other than coating contractor shall be repaired to acceptable condition by coating contractor under cost reimbursement by owner.

3.04 CLEANING

A. Remove debris promptly from work area and dispose of properly.

B. Remove spilled, splashed or splattered coating materials from all surfaces.

C. Do not mar surface finish of items being cleaned.

3.05 FLOOR FINISH SCHEDULE

A. Apply high performance floor system finish to all floor areas shown on the drawings or specified in the room finish schedule.

B. Where base finish is to be installed, provide base profiles as shown and detailed in the drawings and as specified in the room finish schedule.

C. Unless directed by the contract documents do not install high performance floor coatings on:

   a. Ferrous metals installed in concrete slabs.
   b. Non-ferrous metals installed in or adjacent to concrete slabs.
   c. Pipe, conduit, floor drains, insulated conductors, or other electrical, mechanical or process-related equipment.

3.06 GUARANTEE/WARRANTY

A. Provide Owner, through Architect, with an acceptable form of warranty against defects in material or workmanship for a period of five (5) year from date of substantial completion.

B. Manufacturer alone shall furnish a single, written warranty covering 100% of the material and labor costs protecting the Owner from delamination and product failure caused by defective product or defective installation for a period of 5 years from date of installation. Joint warranties between manufacturer and installer not accepted.

C. Issuance of warranty shall be a condition contingent on the receipt of final payment to the Installer.

D. Extent of warranty shall be limited to the repair or replacement of defective surfaces at no cost to the Owner including both material and installation costs associated with any repairs or replacement of defective product or defective installation. The warranty shall not include any remedy for defects caused by abuse, improper maintenance, change of use or operation, moisture migration from the back side of coating system or by normal wear, tear and usage or structural movement of building structure.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 09900 - PAINTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special conditions and Technical Specification sections, apply to work of this section.

1.02 SUMMARY

A. Provide the following:

1. Painting and surface preparation for interior unfinished surfaces as scheduled..
2. Painting and surface preparation for exterior unfinished surfaces as scheduled.
3. Field-painting and surface preparation of exposed mechanical and electrical piping, conduit, ductwork, and equipment.

B. Surfaces to be Painted: Except where natural finish of material is specifically noted as a surface not to be painted, paint exposed surfaces whether or not colors are designated in “schedules”. Where items of surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color or finish is not designated, Architect will select these from standard colors or finishes available.

C. Following categories of work are not included as part of field-applied finish work:

1. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified.
2. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.
3. Finished Metal Surfaces: Unless otherwise indicated, metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting.
4. Operating Parts: Unless otherwise indicated, moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting.

D. Do not paint over any code-required labels, such as Underwriter’s Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.03 SUBMITTALS

A. Submit for approval samples, product data, 4' by 4' mock-ups, extra stock.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer and use only within recommended limits.

C. Regulations: Compliance with VOC and environmental regulations.
D. Coordination of Work: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trade, furnish information or characteristics of finish materials provided for use, to ensure compatible prime coats are used.

1.05 DELIVERY AND STORAGE

A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label.

1. Thinning instructions.
2. Application instructions.
3. Color name and number.

B. Store materials not in use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.

1. Protect from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Take all precautions to ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing and application of paints.

1.06 EXISTING JOB CONDITIONS

A. Apply water based paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees F (10 degrees C), unless otherwise permitted by paint manufacturer's printed instructions.

B. Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees F (7 degrees C) and 95 degrees F (35 degrees C), unless otherwise permitted by paint manufacturer's printed instructions

C. Do not paint in snow, rain, fog, or mist, or when relative humidity exceeds 85%, or to damp or wet surfaces, unless otherwise permitted by paint manufacturer's printed instructions.

1. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. Manufacturers: Subject to compliance with requirements, provide products of one of the following:
1. Sherwin Williams, 'Duration' acrylic.
2. Sherwin Williams, 'Sher-Clear' 1k acrylic clear coat on exposed wood finishes, interior and exterior.

2.02 MATERIALS

A. Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best grade product will not be acceptable.

B. Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.

1. Lead content in pigment, if any, is limited to contain not more than 0.06% lead, as lead metal based on the total volatile (dry-film) of paint by weight.
2. This limitation is extended to interior surfaces and those exterior surfaces, such as stairs, decks, porches, railings, windows, and doors.

PART 3 - EXECUTION

3.01 INSPECTION

A. Applicator must examine areas and conditions under which painting work is to be applied and notify contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to applicator.

B. Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.02 SURFACE PREPARATION

A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

1. Provide barrier coats over incompatible primers or remove and reprime as required. Notify Architect in writing of any anticipated problems in using the specified coating systems with substrates primed by others.
2. Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection, prior to surface preparation and painting operation. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

B. Cementitious Materials:

1. Prepare cementitious surfaces of concrete, concrete block to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.
   a. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed directions.
   b. Clean concrete floor surfaces scheduled to be painted with a commercial solution or muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid, and allow to dry before painting.

C. Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty ir plastic wood-filler. Sandpaper smooth when dried.

1. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling.
2. When transparent finish is required, use spar varnish for back-painting.
3. Back-prime paneling on interior partitions only where masonry, plaster, or other wet wall construction occurs on backside.
4. Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

D. Ferrous Metals: Clean ferrous surfaces which are not galvanized or shop-coated of oil, grease, dirt, loose mill scale and other foreign substances by solvent of mechanical cleaning.

1. Touch-up shop-applied prime coats wherever damaged or bare, where required by other sections of these specifications. Clean and touch-up with same type shop primer.

E. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent. Thoroughly treat the cleaned surface with copper acetates, copper sulfate, etc. Remove all excess etching solution and allow to dry completely prior to application of first coat of paint.

3.03 MATERIALS PREPARATION

A. Mix and prepare painting materials in accordance with manufacturer's directions.

B. Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.04 APPLICATION

A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being used.

B. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces.

C. Completed Work: Match approved mock-ups for color, texture, and pattern. Re-coat or remove and replace work which does not match or shows loss of adhesion.

D. Clean up, touch up and protect work.

INTERIOR PAINT SCHEDULE

General: Provide the following systems for the various substrates, as indicated. For interior CMU, number following specified coating type is Sherman Williams. For exterior CMU, system is by Chemprobe. Substitutions must be approved by the Architect.

Gypsum Drywall Walls	Semi Gloss	1 coat latex primer 2 coats latex finish
Gypsum Drywall Walls and Ceilings in Bathrooms,	Semi Gloss	1 coat latex primer 2 coats latex finish

Kitchens and Wet Areas

Gypsum Drywall Walls to Receive Wall Covering	--	1 coat latex primer
Gypsum Drywall Ceilings	Flat	1 coat latex primer 2 coats latex finish ceiling paint
Wood for Painted Finish	Gloss	1 coat interior alkyd enamel undercoat 2 coats alkyd enamel
Wood for Transparent Finish	Flat	1 coat transparent base sealer 2 coats acrylic flat clear coating
Wood for Stain Finish	Satin	1 coat water base sealer 2 coats water base varnish finish
Ferrous Metals	Semi Gloss	1 coat zinc chromate, rust-inhibiting primer 2 coats alkyd enamel
Concrete Masonry Units	Semi Gloss	1 coat S-W Kem Cati-coat Epoxy Filler/Sealer #B42WA9 2 coats S-W water based catalyzed epoxy #B70/B60V25

EXTERIOR PAINT SCHEDULE

General: Provide the following systems for the various substrates, as indicated.

Wood for Painted Finish	Semi Gloss	1 coat exterior primer 2 coats alkyd enamel
Wood for Transparent Finish	Flat	1 coat transparent base sealer 2 coats acrylic flat clear coating
Stucco	Semi Gloss	1 coat latex primer 2 coats latex finish
Ferrous Metal	Semi Gloss	1 coat, zinc chromate, rust-inhibiting primer 2 coats alkyd enamel finish
Galvanized Metal	Semi Gloss	1 coat, galvanized metal primer 2 coats alkyd enamel finish
Concrete Masonry Units	- -	1 coat Prime-A-Pell 200 1 coat Conformal Stain

END OF SECTION

SECTION 10000 - BUILDERS SPECIALTIES

PART 1 - GENERAL

TECHNICAL SPECIFICATIONS

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to work of this section.

1.02 SUMMARY

A. Types of builders specialties specified in this section include the following:

1. Fire Extinguishers and/or Fire Extinguisher Cabinets
2. Toilet Accessories
3. I.V. Track System
4. Interior Door Signs
5. Corner Guards

1.03 SUBMITTALS

A. Furnish copies of manufacturer's literature indicating the components of the specified materials, installation specifications and maintenance requirements for the materials specified.

B. Shop Drawings and Schedules: Provide mounting details and schedules for all Builders Specialties.

1.04 QUALITY ASSURANCE

A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three years. Use experienced installers. Deliver, handle, and store materials in accordance with manufacturer's instructions.

B. Comply with all pertinent codes and regulations regarding portable fire-fighting devices. Fire-fighting devices shall be approved by Underwriter's Laboratories, Inc. And shall bear U.L. Inc. label. Contractor shall coordinate for the location of all blocking, grounds, backing and support necessary for the installation of all products of this section.

C. Regulations: Comply with ADAAG regulations regarding interior signage.

PART 2 - PRODUCTS

2.01 FIRE EXTINGUISHERS AND CABINETS

A. Manufacturers: Larsen Manufacturing, Minneapolis, Minnesota 55432, or equivalent.
B. Types: UL Rating 2A-10BC, 5 lb. Dry chemical nominal capacity, multi-purpose type, overall height 16-1/4", overall width 7-1/4", shell diameter 4-1/4", Model MP-5..
C. Unless specified or scheduled otherwise, all fire extinguishers not indicated to be installed within cabinets shall be equipped with wall brackets and related hardware for anchorage.
D. Provide (5) five fire extinguishers as located by Architect in shop drawing.

2.02 TOILET ACCESSORIES

A. All toilet and bath accessories shall be constructed throughout of Type 304 stainless steel with satin finish.
B. All products specified herein are based on materials manufactured by Bobrick Washroom Equipment, Inc. Clifton Park, New York 12065, unless specified otherwise. Products manufactured by Bradley Corporation, Moorestown, New Jersey 08057 or American

Dispenser Company, Inc., Carlstadt, New Jersey 07072 are acceptable substitutions.

C. Toilet and Bath Accessories:

1. Standard Plate Glass Mirror: 24”x36”, each restroom.
2. Paper Towel Dispenser: Bobrick B-262 (one each toilet room).
3. Toilet Paper Dispenser: Bobrick B-685 (one each toilet room).
4. Grab Bars: Bobrick B-5806-18, B-5806-36 and B-5806-42 stainless steel, 1-1/4" diameter, satin finish.
5. Utility Shelf/Mop Rack: Bobrick B-224 x 30, stainless steel, one at each mop sink(s).
6. Utility Hook: Bobrick B-233, one each exam room and each toilet room.
7. Under Lavatory Pipe Insulation: Truebro “Handi Lav-Guard”, appropriate model, white, (203) 875-2868

2.03 I.V. TRACK SYSTEM

A. Types: Ultra Cube, White Acrylic Enamel Finish with CE9502, Eze-Lock I.V. Carriage with Hook. Manufactured by InPro Clickeze Privacy Systems, Inpro Corporation, S80 W 18766 Apollo Drive, Muskego, WI 53150, 1 800 222-5566. Two hooks per track, 5’-0” of track per location. Provide tracks as shown in the drawings.

B. Accessories: Provide all end caps, mounting brackets, fasteners, and trim. Provide one adjustable drop chain per hook.

2.04 INTERIOR DOOR SIGNS

A. Door signs are to be engraved laminated plastic. Text will be as noted in Helvetica medium lettering, combination upper and lower case minimum 30 pt letters. Length shall be as required by copy. Where length would exceed 12", two or more lines shall be used, increasing the height of the plate for each line added. Color shall be as selected by the Architect from at least twelve (12) colors. Signs should be attached with foam type double stick tape, 1/2" less overall length as sign.

2.05 VINYL WALL COVERING (WAINSCOT)

A. Provide 42” vinyl wall covering installation with wood chair rail horizontally in the areas specified in the finish schedule.

B . Products: as specified on the finish schedule and/or specifications.

C. Metal Molding to be aluminum one piece cap and wall flange tapering to feather edge.

2.06 CORNER GUARDS

A. Provide 1 ¼ ” x 1 ¼” wide x 36” long stainless steel corner guards at all outside corners unless noted otherwise. Attach with construction adhesive.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Prior to all Work of this Section, Contractor shall carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence. Commencement of work shall indicate acceptance of substrate by Contractor and all errors which may occur from acceptance of substrate shall be repaired or replaced at Contractor’s expense.

3.02 INSTALLATION

A. Install materials and systems in accordance with manufacturer's instructions and approved submittals. Install materials and systems in proper relation with adjacent construction and with uniform appearance. Coordinate with work of other sections.

B. Location of Fire Extinguishers and Cabinets: Locate on wall as directed by Owner.

C. Servicing Fire Extinguishers: The supplier shall coordinate with contractor and will determine approximate completion date of the Work and then inspect, charge and tag fire extinguishers at a date not more than ten (10) days before or less than one (1) day before actual completion date of the Work. Contractor shall place fire extinguishers in cabinets and on brackets.

D. Restore damaged finishes. Clean and protect work from damage.

E. Installation of Door Signs: Install signs on doors as scheduled at 5'-6" AFF to top of sign, centered on door.

1. Doors shall have door signs with text corresponding with the room name assigned on the Architectural floor plan or schedule.

3.03 INSPECTION AND ACCEPTANCE

A. Upon completion of the installation, contractor shall inspect the installations and verify that the Work is complete, properly installed and acceptable. All work found not acceptable shall be removed, replaced and reinstalled at Contractor’s expense to the satisfaction and acceptance of Architect.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 15010 – BASIC MECHANICAL REQUIREMENTS

PART 1 – GENERAL

1.01 MECHANICAL DIVISION INDEX

15010	Basic Mechanical Requirements
15050	Basic Mechanical Materials and Methods
15250	Mechanical Insulation
15300	Fire Protection
15400	Plumbing
15485	Medical Gas Piping Systems
15880	Air Distribution
15990	Testing, Adjusting and Balancing

1.02 GENERAL REQUIREMENTS

A. The General and Special Conditions of the Contract and Technical Specifications shall apply to this section.

B. This section, 15010, shall be part of each section of Division 15 – Mechanical.

1.03 CODES AND STANDARDS

A. All work shall be in accordance with applicable state and local codes. All work shall comply with the rules and recommendations of the National Fire Protection Association, all requirements of local utility companies and the State Fire Marshal. These codes, rules, recommendations and requirements shall take precedence if the drawings and specifications are not in conformance therewith, except that where the drawings and specifications exceed minimum code requirements, the drawings and specifications shall take precedence.

1.04 PERMITS, LICENSES AND FEES

A. The Contractor shall familiarize themselves with all requirements as to permits, licenses, fees, codes and ordinances and arrange to comply with them. All permits, licenses, fees and inspections required for the work under this Contract shall be obtained and paid for by the Contractor unless otherwise specified. The required permits shall be initiated within thirty (30) days after contracts have been awarded.

1.05 DATE AND MEASUREMENTS

A. The data given herein and on the drawings is as exact as could be secured. Their absolute locations, measurements, levels, etc., shall be verified by the Contractor at the site and the Contractor shall satisfactorily adapt their work to the actual conditions at the buildings.

1.06 COORDINATION OF WORK

A. The Contractor shall plan all work so that it proceeds with a minimum of interference between trades. It shall also be the responsibility of the Contractor to provide all openings required in the building construction for the installation of mechanical work. Provisions shall be made for all special frames, openings and pipe sleeves as required. The Contractor shall do all extra cutting and patching made necessary by their failure to properly direct such at the correct time.

1.07 QUALIFICATIONS OF INSTALLERS

A. All work shall be performed by workers skilled in the respective trade required by each part of the work. Helpers and apprentices used for any part of the work shall be under the full supervision of a thoroughly trained and skilled mechanic of the trade required for that part of the work. No allowance will be made for lack of skill in the acceptance or rejection of any work.

1.08 QUALITY OF WORK

A. All work shall be of the best quality, free from defects in workmanship, materials and performance.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. Materials and equipment for which only one manufacturer's name, model or catalog number is given, shall be used as specified. Materials and equipment specified to be one of two or more equally acceptable makes or types may be of any one of the makes or types mentioned, but shall be of one make or type throughout the project. Materials and equipment specified to be of a certain make or type, or equal, shall be of the make and type specified, or alternate materials and equipment which have been approved by the Architect/Engineer. Unless otherwise specified or shown, all materials shall be new and previously unused.

2.02 SUBSTITUTIONS

A. The Architect/Engineer shall be the sole and final judge as to the suitability of items substituted for those specified. The entire cost of all changes of any type due to substitutions for materials specified shall be borne by the Contractor at no extra cost to the Owner.

2.03 EQUIPMENT FINISH

A. The exposed finished surfaces of most mechanical equipment is finished at the factory and great care shall be exercised by the Contractor so as not to damage the original finish during the installation of the equipment. If the factory finish is damaged during construction and installation, the equipment shall be refinished in equivalent factory finish in every respect including color, texture, and smoothness of texture.

PART 3 – EXECUTION

3.01 TESTS AND ADJUSTMENTS

A. After completion of the work, but before final payment is made, the Contractor shall run a test over a sufficient period of time to prove the proper capacity and performance of all apparatus, etc., and of the systems as a whole.

B. All piping shall be pressure tested at 100 psi or twice the operating pressure, whichever is greater. If found that any portion of the system does not function, the Contractor shall make corrections as directed.

C. All controls and safety devices shall be thoroughly checked to assure proper operation and protection.

D. All valves and specialties shall be adjusted to operate smoothly and without binding or leaking. All vents shall be tested. New operating parts shall be installed where ordinary adjustments

fail to remedy faulty operation.

3.02 OPERATING INSTRUCTIONS

A. After all tests and adjustments are completed, the Contractor shall give complete operating and maintenance instructions to the Owner's operating personnel. The Operating and Maintenance Manual shall be used as the basis of instructions.

3.03 OPERATING AND MAINTENANCE MANUAL

A. The Contractor shall furnish an Operating and Maintenance Manual to the Owner after all tests and adjustments have been completed. Final payment will not be made until this manual has been approved by the Architect/Engineer and delivered to the Owner. The manual shall include:

1. Startup and Shutdown Procedure: A written description of the procedure for starting up and shutting down each mechanical system shall be included in the manual. This description shall include motors to start, valves to open, etc., in proper sequence and location of switches, starters, push buttons and valves.
2. Seasonal Changeover Procedure: A written description of the procedures necessary for seasonal changeover from heating to cooling and vice-versa shall be included in the manual.
3. Maintenance Procedure: A written description of all procedures necessary for proper maintenance of all heating and cooling equipment shall be included in the manual. Listings shall include required

time interval between maintenance procedures. This shall include recommendations for water treatment procedures.

4. Valve List: A list of all valves with the number and function of each valve shall be included in the manual.
5. V-Belt and Filter List: A list of all V-belts and filters with sizes, types and quantities required by each piece of equipment shall be included in the manual.
6. Manufacturer's Manuals and Parts List: Operating and maintenance manuals and parts lists furnished by equipment manufacturers shall be included in the manual.
7. Shop Drawings: One copy of each approved shop drawing shall be included in the manual.
8. Index: A complete index shall be included at the front of the manual.
9. Binder: All of the above-described items shall be assembled in a three-ring binder, with a hard cover and durable cloth or plastic finish.

3.04 GUARANTEE

A. The Contractor shall guarantee that all mechanical systems shall be free from defects in workmanship, materials and performance to specified capacities and, that if such defects shall appear during a period of one year from date of final acceptance, they will remedy such defects to the satisfaction of the Architect/Engineer at no extra cost to the Owner, within a reasonable time.

3.05 CLEANING

A. The Contractor shall maintain all areas free from hazardous or obstructive rubbish and debris due to installation of the mechanical work during construction. When the mechanical systems have been installed, the Contractor shall remove all rubbish and debris resulting from their work from the building and site and remove all paint, plaster and accumulated dirt from all mechanical equipment, fixtures and piping.

3.06 AS-BUILT DRAWINGS

A. This Contractor shall prepare as-built drawings for the various component portions of the mechanical installations. These drawings shall be furnished to the Architect/Engineer after completion of the work. These drawings shall be prepared by marking up a set of contract drawings with red pencil to show changes made during construction after the various installations have been completed.

3.07 SHOP DRAWINGS

A. Shop drawings and/or descriptive literature shall be submitted in accordance with these Specifications for the following listed equipment and materials:

Paragraph Number	Description	Date Submitted	Date Resubmitted	Date Reviewed
15050				
Part 2	Valves			
15250				
Part 2	Mechanical Insulation			
15400				
Part 2	Water Meter			
Part 2	Wall Hydrants			
Part 2	Street Washer Hydrants			
Part 2	Hose Bibbs			
Part 2	Drains			
Part 2	Backflow Preventer			
Part 2	Gas-Fired Hot Water Heaters			
Part 2	Hot Water Circulating Pump			
Part 2	Plumbing Fixtures			
Part 3	Sanitary Drainage Pipe Joints			
15880				
Part 2	Heating and Air Conditioning Unit			
Part 2	Roof Exhaust Fans-Centrifugal Type			
Part 2	Ceiling Type Exhaust Fans			
Part 2	Registers			
Part 2	Grilles			
Part 2	Diffusers			
Part 2	Fire Dampers			
Part 2	Smoke Detectors			
15990				
Part 1	Submittals			
Part 3	Submittal of Reports			

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 15050 – BASIC MECHANICAL MATERIALS AND METHODS

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

A. Section 15010, Basic Mechanical Requirements, is a part of this section of the Specifications.

B. This section, 15050, shall be a part of each section of Division 15 – Mechanical.

PART 2 – PRODUCTS

2.01 STEEL PIPE AND FITTINGS

A. Steel Pipe: Shall be Schedule 40 welded or seamless steel pipe conforming to ASTM Specification A-120 and A-53 Grade B. Steel pipe shall be black or galvanized as specified for the application.

B. Gray Cast-Iron Threaded Fittings: Shall be gray cast-iron, free of sandholes and imperfections, with clean ANSI standard taper pipe threads. The material used in the manufacturing of the fittings shall conform to ASTM A-126; the fittings shall be manufactured according to ANSI Standard B16.4, Class 125 and Federal Specification SS-P-501. The taper pipe threads shall conform to ANSI Standard B2.1. Fittings shall be black or hot-dip galvanized as specified for the application.

C. Malleable-Iron Threaded Fittings: Shall be malleable-iron, free of sandholes and imperfections, with clean ANSI standard taper pipe threads. The material used in the manufacturing of the fittings shall conform to ASTM A-197; the fittings shall be manufactured according to ANSI Standard B16.3, Class 150 and Federal Specification WW-P-521. The taper pipe threads shall conform to ANSI Standard B2.1. Fittings shall be black or hot-dip galvanized as specified for the application.

D. Cast-Iron Drainage Fittings: Shall be gray cast-iron, free of sandholes and imperfections, with clean ANSI standard taper pipe threads. The fitting shall be manufactured according to ANSI Standard B16.12 and Federal Specification WW-P-491. Fittings having openings at right angles shall have pitched threads to provide a ¼" per foot pitch drainage.

E. Welding Fittings: Shall be steel, butt weld fittings complying with ANSI Standard B16.9. Tee connections shall be made with standard tee fittings or BONNEY "Weld-O-Lets."

2.02 CAST-IRON SOIL PIPE AND FITTINGS

A. Pipe and fittings shall be gray cast-iron soil pipe and fittings that comply with Federal Specification WW-P-401, ANSI Standard A112.51 or Commercial Standard CS 188. Joints shall be hub-and-spigot for elastomeric compression type gaskets complying to ASTM A 74 for below-grade service or hubless for "No'Hub" elastomeric gaskets with stainless steel clamps complying with ASTM Standard C564 and the Cast Iron Pipe Institutes Standard 301 for above-grade service.

2.03 COPPER PIPE AND FITTINGS

A. Copper Water Tube: Shall comply with Federal Specification WW-T-799 and ASTM Specification B88. Weight shall be K or L and temper shall be hard-drawn or annealed as specified for the application.

B. Copper Water Tube Fittings: Pressure fittings shall be wrought-copper solder joint complying

with ANSI Standard B16.22, cast copper alloy solder joint complying with ANSI Standard B16.18, or cast-copper alloy flared tube complying with ANSI Standard B16.26 as required for the application.

C. Copper Flange Fittings: Cast-copper alloy flanges and flange fittings shall be Class 150 in accordance with Federal Specification WW-F-406 and ANSI Standard B16.24 or Class 125 meeting ASME standard.

D. Cast Bronze Threaded Fittings: Shall comply with ANSI B16.15.

E. Copper Drainage, Waste and Vent Tubing: Shall comply with ASTM Specification B306.

F. Copper Drainage, Waste and Vent Tubing Fittings: Shall be wrought-copper drainage fittings complying with ANSI Standard B16.29 or cast copper alloy solder joint drainage fittings complying with ANSI Standard B16.23. Fittings shall have "DMV" stamped into the fitting.

2.04 PVC WATER PIPE AND FITTINGS

A. PVC Water Pipe and Fittings 3" and Smaller:

1. Pipe: Shall be rigid, unplasticized, polyvinyl chloride (PVC) Type I Schedule 40 in accordance with ASTM D1785
2. Fittings: Fittings shall be PVC Schedule 40 with cemented (solvent welded) joint slip socket and shall be in accordance with ASTM D2466.

B. PVC Sewer Pipe and Fittings 4" and Smaller:

1. Pipe: PVC pipe shall be Schedule 40, Type I with plain ends conforming to ASTM D2665.
2. Fittings: Fittings shall be PVC Schedule 40 with cemented (solvent welded) joint slip socket an shall be in accordance with ASTM D2665 an D3311.

2.05 VALVES

A. Valves shall be furnished and installed wherever shown or specified, using adapters where required. All removable or replaceable equipment shall have shutoff valves. Ball, butterfly, gate, globe and swing check valves shall be manufactured by Grinnell, Milwaukee, Nibco, Stockham, or approved equal. All valves 2-1/2" and larger shall be flanged. All valves shall be same size as upstream pipe, unless otherwise indicated.

1. Ball Valves, 1" and Smaller: Rated for 125 psi saturated steam pressure, 400 psi WOG pressure; two-piece construction; with bronze body conforming to ASTM B 584 Alloy 844, standard port, chrome-plated brass ball, replaceable "Teflon" or "TFE" seats and seals, blowout-proof stem, and vinyl-covered steel handle. Provide threaded ends for all ball valves. Solder ends shall be unacceptable. Valve shall be Grinnell valve, or approved equal.
2. Ball Valves, 1-1/4" to 2": Rated for 150 psi saturated steam pressure, 600 psi WOG pressure; three-piece construction; with bronze body conforming to ASTM B 584 Alloy 844, full port, chrome-plated bronze ball, replaceable "Teflon" or "TFE" seats and seals, blowout-proof stem, and vinyl-covered steel handle. Provide threaded ends for all ball valves. Solder ends shall be unacceptable. Valve shall be Grinnell valve, or approved equal.

2.06 STRAINERS

A. Furnish and install strainers where shown on the drawings and details. Strainers shall be Hoffman Series, or equal, with cast iron or bronze body and brass or stainless steel perforated screens. Sizes ½" through 2" for Copper Piping Systems: Y pattern, bronze body,
B. 250 lb screwed.

2.07 UNIONS

A. Unions shall be provided at each screwed type valve and at each piece of equipment having screwed connections.

1. Unions in steel pipe shall be heavy-duty, malleable, screwed-type, with brass-to-iron ground joints.

2. Unions in copper tube shall be copper with solder connections and copper-to-copper ground joints. Nibco, or equal.
3. Dielectric unions, EPCO, or equal, shall be provided at all connections between ferrous and non-ferrous piping, and at all connections between piping and equipment where one is ferrous and the other non-ferrous.

2.08 PAINT

A. Paint shall be as specified in Section 09900 – Painting.

PART 3 – EXECUTION

3.01 EXCAVATION

A. Piping trenches shall be accurately graded to provide uniform support on undisturbed soil for piping. Excavations for joints shall be made after grading trench bottom and shall be as small as possible. Excavations made too deep shall be filled with fill sand and compacted to density of surrounding undisturbed soil. Unstable soils not suitable for proper pipe support shall be removed and replaced with suitable materials as directed.

B. Care shall be taken to avoid injury to foundations or footings. Sheeting, shoring and bracing shall be provided where necessary in deep trenches or in unstable soils. Necessary grading shall be done to prevent surface water from entering trenches or excavations. Water accumulating in trenches or excavations shall be removed as soon as possible. The last 4" depth of all trenches shall be excavated by hand to fit the pipe in the grade.

3.02 BACKFILLING

A. After the installation has been tested and approved, trenches and excavations shall be backfilled in 6" layers of earth, free from clods and stones, thoroughly tamped to a density equal to adjacent material. Where settlement occurs, excavations or trenches shall be reopened, refilled and compacted to a density equal to adjacent material.

B. Pavement or walk cuts shall be repaved with material identical to surfacing material removed in accordance with local codes or ordinances and as directed by the Architect/Engineer. Paving cuts in concrete shall be made with a concrete saw in straight lines.

3.03 EQUIPMENT INSTALLATION

A. All motors and bearings shall be covered with watertight and dustproof covers during the construction period.

B. All piping connection to equipment shall be made with shutoff valves and unions or flanges to permit dismantling. Flanges and unions shall also be installed in the piping systems to permit disassembly consistent with good installation practice.

C. All belt drives, flexible couplings and other exposed rotating or reciprocating parts shall be covered with approved safety covers. Covers shall be permanent type and easily removable.

D. Each pump shall have a check valve and gate valve in the discharge line.

E. All piping connections to rotating or reciprocating equipment shall be made with flexible piping connections. All floor-mounted equipment items shall be installed on a concrete base 3-1/2" above the floor. See paragraph on Concrete. All floor-mounted rotating or reciprocating equipment shall be mounted on vibration isolation pads or springs designed for that specific purpose.

3.04 PIPING INSTALLATION

A. All piping shall be securely supported by means of pipe hangers. Due provision shall be made for expansion of piping. Pipes shall be securely anchored where necessary to properly distribute stresses. Pipe hangers shall be spaced as follows:

1. Cast-Iron Pipe:	One hanger to each hub.	
2. Steel or Copper Pipe:	1-1/4" or smaller	8' on centers
	1-1/2" or 2"	10' on centers
	2-1/2" or larger	12' on centers

B. Pipe hangers shall be of the split-loop type with hanger rod, or of the trapeze type with horizontal angle iron "U" bolts and hanger rods. Split-loop type hangers shall be steel or cast iron for uninsulated steel or cast-iron pipe, and copper plated for uninsulated copper pipe. Pipe hangers for insulated pipe shall have attached metal insulation shield. Hanger rods shall be 3/8" for pipes up through 2", ½" for pipes 2-1/2" through 3-1/2", 5/8" for 4" and 5" pipes, ¾" for 6" pipes, and 7/8" for 8" pipes and larger. Rods for trapeze hangers shall be 7/8".

C. Approved insulating blocking shall be placed between sheet metal jacket and bottom of pipe where jacket alone cannot prevent crushing. Insulation jacket or vapor barrier shall be sealed after installation blocking. All insulation shall extend through wall or floor sleeves. Cutting of openings and installation of frames through walls and surfaces shall be done in a neat, workmanlike manner. Openings shall be cut only as large as required for the installation and sleeves shall be grouted in place. Surfaces around openings shall be left smooth.

D. Insulating couplings, EPCO or equal, shall be installed in all connections between piping systems of dissimilar materials and connections between piping and equipment of dissimilar materials.

E. Where piping connections to pumps are made through flexible connections, the piping shall be securely anchored against longitudinal thrust along axis of pipe to remove all stress from flexible connections.

F. Pipe rollers and special pipe supports shall be as shown on the drawings.

G. All openings in pipes shall be kept closed during the progress of the work.

H. If any existing water, gas or other pipes and appurtenances are encountered, which interfere with the proper installation of new work and will not be in use after new work is finished, this Contractor shall close such pipe in a proper manner and, if necessary, shall move or remove

the pipes as directed by the Architect/Engineer.

3.05 ACCESS

A. All motors, valves, control devices, specialties, etc. shall be located so as to provide for easy access for operation, repair and maintenance. If concealed, access doors shall be provided. Access doors for concealed valves, control devices and other specialties shall be of steel, 18" x 18", complete with steel frame, as manufactured by Milcor Division, Inland Steel Company, or equal. Frames shall be designed for masonry, plaster or drywall as required and shall be fire rated to match the wall/ceiling assembly on which it is installed.

3.06 EQUIPMENT IDENTIFICATION

A. Each piece of equipment shall have a plastic or metal identification plate securely fastened to the equipment in a position to be easily read. Plate shall have name and mark shown on the drawings such as "Air Handling Unit AH-1." This name and mark shall be used in referring to items of equipment in the Operating and Maintenance Manual.

3.07 VALVE DESIGNATION

A. A stamped brass plate, securely fastened to each valve, shall be furnished and installed on all valves. Each plate shall have a number engraved on it. A list of all valves with the number and function of each valve shall be included in the Operating and Maintenance Manual.

3.08 PIPE CODING

A. Mechanical Contractor shall code all piping which is accessible for maintenance operations, except piping in finished spaces, with Setmark semi-rigid plastic (not pressure-sensitive) identification markers as manufactured by Seton Name Plate Corporation, New Haven, Connecticut 06506, or equal.

B. Direction of flow arrows shall be included on each marker.

C. In Conformance with "Scheme for the Identification of Piping Systems," ANSI A13.1, 1981, each marker shall show:

1. Approved color-coded background;
2. Proper color of legend in relation to background color;
3. Approved legend letter size, and
4. Approved marker length.

D. Setmark Type SNA markers shall be used on diameters ¾" through 5".

E. Setmark Type STR markers shall be used on diameters 6" or larger.

F. For pipes under ¾" O.D. (too small for color bands and legends), brass identification tags 1-1/2" in diameter with depressed ¾" high black-filled letters above ½" black-filled numbers shall be fastened securely at specified locations.

G. Locations for pipe and electrical markers to be as follows:

1. Adjacent to each valve (except on plumbing fixtures).
2. At each branch and riser take-off.
3. At each pipe passage through wall, floor and ceiling construction.
4. At each pipe passage to underground.
5. On all horizontal pipe runs – marked every 25 feet.

3.09 LUBRICATION

A. The Contractor shall be required to provide all lubrication for the operation of all equipment until acceptance. A chart listing each piece of equipment, the proper type of oil or grease required, and recommended frequency of lubrication shall be included in the Operation and Maintenance Manual.

B. The Contractor shall be required to run in all bearings and, after they are run in, shall drain and flush bearings and refill with a new oil change.

3.10 CONCRETE WORK

A. Furnish and install all concrete work under the Mechanical Contract as shown on the plans. Sizes as given are applicable to basic specification items. If substitute items are used, this Contractor shall be responsible for the revision of sizes and depths and shall give the information to the General Contractor for any revised sizes of floor openings.

B. Each major item of equipment in mechanical equipment rooms shall have a concrete pad 3-1/2" above the floor.

C. Concrete: Shall contain not less than five (5) sacks of cement per cubic yard. Strength of concrete shall not be less than 3,000 psi at 28 days.

D. Reinforcing Steel: All bars shall be deformed, billet, intermediate grade, in accordance with ASTM Specification A15-30. Welds in wire fabric shall be of sufficient strength that they will not be broken during placement.

E. Placing: No concrete can be placed until the Architect/Engineer has approved the depth and character of the foundations, the placement of the reinforcing steel, forms or shoring, etc. The Contractor shall give the Architect/Engineer 24-hours notice before placing concrete. Concrete can be deposited under water only with the written consent of, and under the supervision of, the Architect/Engineer. All concrete shall be vibrated, using mechanical vibrators, by skilled workmen paying particular attention to corners and faces of concrete against forms and joints. All concrete work will be performed by skilled tradesman in that particular field of work. No concrete will be poured below 40º F. unless proper provisions are made for heating, as directed by the Architect/Engineer. All concrete will be cured by covering with burlap and keeping cover saturated for seven (7) days after placement.

F. Finish: All foundations shall be finished by striking off to true plane with a template, the surface sprinkled with a mixture of one part dry cement and one part sand, and then floated to an even surface. All vertical faces shall be rubbed with a carborundum brick and a neat cement grout to provide a smooth surface after removing forms. Forms shall be removed within 24 hours to develop bond between grout and concrete.

G. Forms: All forms shall be of wood so designed and constructed to hold the concrete true to line without sagging, bulging or distorting.

H. Installation: Concrete work shall be installed straight, level and true with finish consistent with appearance of surrounding work. Edges shall be chamfered where required to prevent chipping. Pads of foundations on grade shall be installed with ½" approved expansion joint material all around. Pads or foundations on slabs shall be doweled to slab. Equipment requiring special foundations shall have foundations installed as recommended by the equipment manufacturer.

1. Anchor bolts shall be set in pipe sleeves large enough to permit adjustment. Bolts may be anchored in place with lead or sulfur.
2. Commercially available, ready-mixed concrete, of type approved by the Architect/Engineer, may be used for the required work.

3.11 FIXTURES AND EQUIPMENT FURNISHED BY OTHERS

A. Where the drawings indicate fixtures and equipment that are to be furnished and installed by others, and that require connections to the mechanical systems, the Mechanical Contractor shall furnish and install all rough-in of piping or ducts, all necessary traps, stops and supplies, and shall make final connections to the fixtures and equipment. Rough-in locations shall be determined from the equipment itself or from the equipment manufacturer's shop drawings.

END OF SECTION

SECTION 15250 – MECHANICAL INSULATION

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Section 15010, Basic Mechanical Requirements, is a part of this section of the Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Refer to Section 15050 – Basic Mechanical Materials and Methods.

B. Refer to Section 15880 – Air Distribution, for acoustic duct liner.

1.03 WORK INCLUDED

A. The work under this section shall include furnishing and installing all insulation required for the mechanical systems for this project except acoustic duct liner which is included in Section 15880 – Air Distribution.

PART 2 – PRODUCTS

2.01 MANUFACTURER

A. Insulation and materials shall be Owens-Corning, Knauf, Mansville, Certainteed or Armstrong. Special materials shall be of manufacturer indicated or equal.

B. The insulation and materials specified shall be furnished to the job bearing the manufacturer's label.

2.02 MATERIALS LIST

A. The Contractor shall submit a complete materials list for the project.

2.03 FIBERGLASS PIPE INSULATION

A. Fiberglass pipe insulation shall be fibrous glass wool accurately molded to conform to the outside diameter of the pipe. Insulation shall be suitable for use on either hot or cold water pipes.

2.04 ALL-SERVICE JACKET

A. All-service jacket for pipe insulation shall have a white kraft paper outer surface bonded to .35 mil aluminum foil and reinforced with fiberglass yarn, with laps for longitudinal joints and matching tape for end joints.

2.05 ALUMINUM JACKET

A. Metal jacketing for exterior pipe insulation shall be Manville Metal-Lok ML, or approved equal, polished aluminum of 0.016" thickness with banding, adhesives, sealers, etc., as recommended by the insulation manufacturer.

2.06 FLEXIBLE ELASTOMERIC INSULATION

A. Flexible elastomeric insulation shall be fire retardant, foamed plastic accurately molded to conform to the outside diameter of the pipe or in flat sheets for ductwork. Insulation shall

have a density of 6.0 lbs per cubic foot and a K-factor of 0.28 BTUH-IN/SQ FT-DEG F.

2.07 VALVE AND PIPE FITTING INSULATION

A. Valve and pipe fitting insulation shall be Zeston premolded, one-piece PVC insulated fittings, or equal.

2.08 FLEXIBLE DUCT WRAP INSULATION AND VAPOR BARRIER

A. External wrap insulation for metal ducts shall be flexible glass fiber blanket. Density shall be ¾ lb per cubic foot with a thickness of 1-1/2". The out of package R-value shall not be less than 5.8 and an installed R-value of not less than 4.4 (assuming a maximum of 25% compression during installation) at 75º F.

B. The duct wrap insulation shall satisfy the fire rating requirements listed below and also satisfy NFPA 90A and 90B standards. The insulation shall have a moisture absorption of less than 0.2% by volume, shall not accelerate corrosivity to steel, copper, or aluminum, and shall not promote growth of fungi or bacteria.

C. The duct wrap insulation shall comply with Federal Specifications HH-I-558B Form B, Type I Class 6 for temperatures up to and including 350º F.

D. Vapor Barrier: If the duct is used for cooling applications, then the duct wrap insulation shall have FSK aluminum foil facing with a maximum vapor permeance of 0.02 perms. The faced duct wrap shall be rated to +250º F. The FSK aluminum facing shall comply with Federal Specification HH-B-100B type II for medium vapor transmission and moderate puncture resistance.

2.09 OUTDOOR DUCT WRAP INSULATION

A. External wrap insulation for metal ducts shall be 1-1/2" thick rigid polystyrene board. Corrugated aluminum sheeting .015" thick shall be wrapped around the insulation and sealed watertight.

2.10 FIRE RATINGS

A. All insulation shall have composite (insulation, jacket or facing and adhesive used to adhere the facing or jacket to the insulation) fire and smoke hazard ratings as tested by procedure ASTM E-84, NFPA 255 and Underwriters Laboratories, Inc., 723 not exceeding Flame Spread 25 and Smoke Developed 50.

B. Accessories such as adhesives, mastics, cements, tapes and asbestos cloth for fittings shall have the same component ratings as listed above.

C. Any treatment of jackets or facings to impart flame and smoke safety shall be permanent. The use of water-soluble treatments is prohibited.

D. The Insulation Contractor shall certify in writing, prior to installation, that all products to be used will meet the above criteria.

PART 3 – EXECUTION

3.01 GENERAL

A. Insulation shall be applied only by mechanics skilled at such work. The appearance of the

finished work shall be of equal importance with its mechanical correctness and efficiency. Insulation for heating surfaces and piping shall not be applied until such times as those surfaces are sufficiently heated to properly dry out the insulation. Insulation shall not be applied until the system is tested and approved as required.

B. All portions of the covering at joints and fittings shall be vapor sealed on cold piping (domestic cold water, storm drainage, refrigerant suction, chilled water).

C. Insulation shall be continuous through all walls, floors and ceilings unless otherwise specified, shown or approved.

D. Where insulation is to be painted, all surfaces shall be properly prepared to receive paint.

E. Unions, flanges and valves shall be insulated as specified for the associated piping system.

3.02 PIPE INSULATION

A. Pipe insulation shall be as scheduled below:

System	Location	Thickness	Jacket
Cold water Domestic	All piping	1" Fiberglass Pipe Insulation	All Service Jacket
Domestic HW & HW recirc.	All piping	2" Fiberglass Pipe Insulation	All Service Jacket

B. Fiberglass pipe insulation shall be applied over clean, dry surfaces with ends firmly butted together. Longitudinal jacket laps shall be stapled on hot lines and sealed with vapor barrier adhesive on cold lines. Joints on hot lines shall be covered using tape fastened with staples, and cold lines shall be covered with vapor barrier tape fastened with vapor barrier lap adhesive.

C. Flexible Tubing Insulation: Cut seams and mitered joints in flexible insulation shall be sealed with vapor resistant adhesive.

D. Pipe hangers shall be installed around the outside of the insulation and insulation shall be protected against crushing by sheet metal jacket of proper area and weight. Approved insulating blocking shall be placed between sheet metal jacket and bottom of pipe to prevent crushing of insulation on piping 2-1/2" and larger. Insulation jacket shall be sealed after installing blocking.

3.03 VALVE AND PIPE FITTING INSULATION

A. Fittings for Fiberglass Insulated Pipe:

1. Valves and fittings shall be insulated with pre-cut fiberglass and covered with Zeston, or equal, pre-molded, one-piece PVC insulated fittings covers. Fittings on cold water, chilled water and storm drainage piping shall have all edges sealed with Zeston adhesive and wrapped with Zeston vapor barrier tape. Insulated fittings shall be installed according to the manufacturer's recommendations.
2. Concealed valves and fittings shall be insulated with Zeston, or equal, fittings or shall be insulated as specified below:
   a. Valves and fittings 2" and smaller shall be wrapped with strips of glass fiber blanket insulation secured with twine to a thickness approximately 1/8" less than the adjacent

pipe insulation. The valves and fittings shall then be coated with vapor barrier mastic to provide a smooth finish, flush with the adjacent pipe insulation and a wrapping of polyvinyl chloride tape with a minimum 2" overlap onto adjacent pipe insulation.

b. Valves and fittings 2-1/2" and larger shall be insulated with pre-molded fiberglass fitting covers or cut segments of pipe insulation wired in place and coated with vapor barrier mastic and polyvinyl chloride tape with a minimum 2" overlap onto adjacent pipe insulation.

B. Fittings for Flexible Tubing Insulation: Insulation for valves and fittings of piping insulated with flexible tubing insulation shall be insulated with the same materials as the pipe insulation cut into segments and sections as required and sealed with vapor resistant adhesive.

3.04 DUCT INSULATION

A. All square and rectangular ductwork shall have 1" acoustic liner unless otherwise noted on the drawings and as specified in Section 15880 – Air Distribution for acoustic duct liner.

B. All ducts not having insulating duct liner shall have external wrap insulation as specified under "Products" of this Specification section. Ducts requiring external wrap insulation are as specified below:

System	Location
Supply Air Systems	All round & oval ducts

Ducts used for cooling shall have a vapor barrier jacket.

C. Installation: Install insulation products in accordance with the manufacturer's written instructions and in accordance with the recognized industry practices to ensure that the insulation serves its intended purpose. Install insulation materials with smooth and even surfaces. Clean and dry ductwork prior to insulating. Butt insulation joints firmly together to ensure complete and tight fit over surfaces to be covered. Maintain integrity of vapor barrier on ductwork and insulation and protect it to prevent puncture and other damage. Replace if insulation or vapor barrier is badly damaged. Extend ductwork insulation without interruption through walls, floors and similar ductwork penetrations, except where otherwise indicated.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 15300 – FIRE PROTECTION

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Section 15010, Basic Mechanical Requirements, is a part of this section of the Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Refer to Section 15050 – Basic Mechanical Materials and Methods.

1.03 WORK INCLUDED

A. The work under this heading shall include furnishing and installing all materials as previously specified, or as shown on the drawings, as necessary for a complete automatic Fire Sprinkler System. The system shall be installed in accordance with all standards and requirements of the National Fire Protection Association and the City Fire Marshal.

B. The system shall be an automatic, wet-pipe system installed in accordance with all requirements and recommendations of NFPA Pamphlet 13.

C. The system shall cover all buildings.

D. All fire protection system materials and components shall be Underwriters Laboratories (UL) listed and labeled, and Factory Mutual approved for the application anticipated.

1.04 DRAWINGS

A. The Contractor shall submit to the Architect/Engineer for approval, complete installation drawings showing the Sprinkler System layouts. The layout shall indicate all of the sprinkler piping, sprinkler head locations and details of anchors and supports as required.

B. The Sprinkler System shall be laid out to eliminate all conflicts between the Sprinkler System and the structure including the Mechanical and Electrical Systems as they are shown on the contract drawings.

C. The layout shall indicate coordination between such items as ductwork, lights, structural members, etc.

D. Drawings shall be submitted to the City Fire Marshall and stamped as approved by him before submittal to the Architect/Engineer for approval.

E. The Sprinkler System shall be designed and installed by persons regularly engaged in this type of work and approved by local and state authorities.

PART 2 – PRODUCTS

2.01 WATER SERVICE PIPE, FITTINGS AND SPECIALS

A. Water service pipe, fittings and specials shall be ductile-iron pressure pipe, fittings and specials as specified in Section 15050 – Basic Mechanical Materials and Methods.

2.02 ABOVE GROUND SPRINKLER PIPE

A. Sprinkler pipe shall meet ASTM A795 and/or A135, and shall be UL listed and FM approved. All pipe shall have a minimum Corrosion Resistance Ratio, CRR = 1.00 or greater, as per UL listing. All piping shall be black carbon steel, except in FM approved dry systems where pipe is to be "hot dip" galvanized in accordance with ASTM A795 zinc coating specifications. Sprinkler Contractor shall supply mill certificates verifying that the products submitted from the manufacturer meet the above criteria.

2.03 GATE VALVES

A. Gate valves shall be approved outside screw and yoke (O.S. & Y), iron body, wedge gate valves, Underwriters pattern.

2.04 INDICATOR POST OPERATORS

A. Gate valves outside building shall have Underwriters approved indicator post operators located where shown on the drawings.

2.05 CHECK VALVES

A. Check valves shall be approved iron body, clearway, horizontal, swing check valves, Underwriters pattern.

2.06 FIRE DEPARTMENT CONNECTIONS

A. Furnish and install Fire Department connections for the Sprinkler System as indicated on the drawings.

B. Fire Department connections shall be chromium-plated type, installed complete with valves and piping. Caps shall be furnished and all threads shall conform to local Fire Department threads. A sign shall be provided reading "FIRE DEPARTMENT CONNECTION – SPRINKLERS."

2.07 ALARM

A. Alarm provisions shall consist of water alarm gongs.

2.08 SPRINKLER HEADS

A. Sprinkler heads shall be pendant type with concealed piping.

2.09 FIRE HYDRANTS

A. Fire hydrants shall be of the compression type for 5' burial, constructed for 300 psig and shall conform to AWWA Specification C-502. Each hydrant shall have two 2-1/2" nozzles and one pumper nozzle with threads as required by the local Fire Department. Each hydrant shall have an auxiliary gate valve and box. Hydrants shall be set so that nozzles are at least 12" above the ground. Provide a gravel bed at the bottom of each hydrant for drainage. Hydrants shall be Dresser Model 300, 5-1/4" valve size with red finish.

PART 3 – EXECUTION

3.01 WATER SERVICE

A. Water service shall be constructed in conformance with paragraphs "Excavation" and "Backfilling" of Section 15050 – Basic Mechanical Materials and Methods, and the following:

1. General: Piping for fire sprinkler water service, as indicated on plan, shall be of the type and materials specified herein and shall be used exclusively throughout the job. The pipe and accessories shall be of new and unused material.
2. The full length of each section of pipe shall rest solidly upon the pipe bed, the recesses excavated to accommodate the bells and joints. Any pipe that has the grade or joint disturbed after laying shall be taken up and relayed. The interior of the pipe shall be thoroughly cleaned of all foreign matter before being lowered into the trench, and shall be kept clean during laying operations by means of plugs or other approved methods. The pipe shall not be laid in water, or when trench or weather conditions are unsuitable for the work, except by permission of the Architect/Engineer.
3. Water shall be kept out of the trench until the material work is not in progress. Open ends of pipe and fittings shall be securely closed so that no trench water, earth or other substances will enter the pipes or fittings. Any section of pipe found to be defective before or after laying shall be replaced with new pipe without additional expense to the Owner.
4. Cast-iron bends shall have lugs for water socket clamps and shall be installed with tie rods. Tie rods shall be installed as recommended by the State Fire Inspection Bureau. Concrete anchor blocks shall be installed at bends and tees as required to adequately protect all joints.
5. After the pipe is laid, the joints complete and the trench partially backfilled (leaving the joints exposed for examination), the water service and Sprinkler System piping shall be thoroughly flushed and shall be subjected to a water pressure test of 200 lbs per square inch for 2 hours. All exposed pipe, joints, fittings, valves and hydrants shall be carefully examined during the open trench test. Joints showing visible leakage shall be made tight. Cracked or defective pipe fittings, valves or hydrants disclosed in the pressure test shall be replaced by the Contractor with sound material, and the test shall be repeated until the test results are satisfactory to the Architect/Engineer and the State Fire Marshal.

3.02 SPRINKLER SYSTEM

A. The Sprinkler System shall be installed in conformance with Pamphlet 13 of the National Fire Protection Association and all requirements of the City Fire Marshal and the State Inspection Bureau.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 15400 – PLUMBING

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

A. Section 15010, Basic Mechanical Requirements, is a part of this section of the Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Refer to Section 15050 – Basic Mechanical Materials and Methods.

B. Refer to Mechanical Equipment Schedule and Plumbing Fixture Schedule located on the drawings.

1.03 WORK INCLUDED

A. The work under this section shall include furnishing and installing the following:
   1. All piping, fixtures and equipment inside the building specified or shown on the drawings for the Plumbing Systems.
   2. All sewers, utilities, connections and appurtenances outside the building specified or shown on the drawings for the Plumbing Systems.

PART 2 – PRODUCTS

2.01 WATER METER

A. Furnish and install a new water meter at location shown. Meter shall be of the type used by the City Water Department. Meter shall be valved on each side and have ¾" valved drain.

2.02 WALL HYDRANTS

A. Wall Hydrants shall be Woodford Model 65, or the equivalent by Zurn, Wade, Josam or J.R. Smith. Hydrants shall be of non-freeze, anti-siphon, self-draining construction with ¾" hose connection, loose key stop, brass facing and piping, and chrome-plated face. Provide an inside stop and waste valve, Walworth No. 4D, or equal, for each hydrant at an accessible location. Check wall thickness before ordering and install 30" above grade unless otherwise shown on the drawings.

2.03 STREET WASHER HYDRANTS

A. Street washer hydrants shall be Woodford Model Y70, or the equivalent by Josam, Wade or Zurn. Hydrants shall be of non-freeze construction for 5' burial, with ¾" hose connection, loose key stop, brass body and piping. Provide an inside stop and waste valve Walworth No. 4D, or equal, for hydrant system at an accessible location. Anchor top of each hydrant with a 12" x 12" x 4" thick concrete pad at grade level, and provide a 12" x 12" x 12" gravel bed at bottom of hydrant for drainage.

2.04 HOSE BIBBS

A. Hose bibbs shall be Chicago No. 952, chrome-plated hose bibbs with hose end, removable tee handle and a backflow preventer spout.

2.05 DRAINS

A. Furnish and install all drains as specified and shown on the drawings. Provide flashing as specified under paragraph "Flashing" of this section. Drains shall be Acorn, J.R. Smith, Josam, Wade or Zurn. J.R. Smith numbers are used below.

1. Roof Drains: J.R. Smith Figure 1010RC, cast-iron roof drain with flashing clamp, removable mushroom-type cast-iron dome and steel deck clamp. J.R. Smith Figure 1020 side outlet roof drain may be used if necessary due to restricted space.
2. Overflow Drains: J.R. Smith Figure 1070 cast-iron roof drain with flashing clamp, removable mushroom-type cast-iron dome, adjustable overflow level and deck clamp.
3. Floor Drains in Finished Areas: J.R. Smith Figure 2010A, cast-iron body with bottom outlet, seepage flange, weep holes and adjustable round nickel-alloy strainer.
4. Floor Drains in Finished Areas with Tile Floors: J.R. Smith Figure 2010B cast-iron body with bottom outlet, seepage flange, weep holes and adjustable square nickel-alloy strainer.
5. Floor Drains in Unfinished Areas: J.R. Smith Figure 2530 cast-iron body with cast-iron grate, trap and backwater valve.
6. Downspout Nozzles: J.R. Smith Figure 1770 cast-bronze nozzle with cast-bronze wall flange.

2.06 BACKFLOW PREVENTER

A. Backflow preventer shall be Watts Regulator No. 909, or approved equal. Valve shall be bronze body with stainless steel internal parts and rubber check valve assemblies. Valve assembly shall be complete with two non-rising stem gate valves or full port positive shut off ball valves, union connections and strainer, and shall meet performance requirements of A.W.W.A. Standard C506.

2.07 GAS-FIRED HOT WATER HEATERS

A. Gas-fired hot water heaters shall be installed as shown on the drawings complete with water, gas and vent connections. Heaters shall be designed for use with natural gas and shall be approved by the American Gas Association. The heater shall be of manufacturer and capacity shown on the drawings. Connector and stack shall be Metalbestos Type B vent. Heater shall have relief valve, thermostatic controls, hose bibb drain, insulated jacket and shall be installed in accordance with the rules of the gas company. Relief valve discharge shall be piped to a floor drain. Water heaters with input ratings of 200,000 BTUH or greater shall be ASME constructed and stamped.

2.08 HOT WATER CIRCULATING PUMP

A. Furnish and install the hot water circulating pump of the capacity, model and manufacturer listed on the Mechanical Equipment Schedule, or approved equal. Pump to be suitable for potable water applications.

B. All parts of pump in contact with water shall be of bronze or stainless steel construction. Pump shall have a hardened stainless steel shaft with integral filter. Bearings are to be lubricated by the circulating fluid. Motor shall be non-overloading at any point on the pump curve and shall have impedance protection.

2.09 PLUMBING FIXTURES

A. General: Plumbing fixtures shall be furnished and installed in a neat and workmanlike manner with proper connections to supply and drainage piping. All fixtures shall be free of flaws and defects of any sort in material and workmanship and shall operate perfectly when installed in accordance with the manufacturer's directions. The manufacturer shall agree to replace all or any part of the fixtures which show flaws or defects due to faulty manufacturing.

B. The Contractor shall be responsible for providing proper grounds for all fixtures requiring same. Fixtures shall conform to current commercial standards for Sanitary Cast-Iron Enameled Ware and Staple Vitreous China Plumbing Fixtures recommended by the U.S. Department of Commerce. Fixtures specified hereinafter shall be the standard products of one of the manufacturers listed below unless otherwise noted:
   1. American Standard
   2. Bradley
   3. Crane
   4. Eljer
   5. Kohler

C. Protection of Fixtures and Accessories: This Contractor shall be responsible for protection of the plumbing fixtures and accessories during construction. He shall replace at his own expense any fixture or accessory that is marred, scratched, defaced or broken. Fixtures shall be covered with building paper and wooden crates during construction.

D. Mounting Heights: Fixtures shall be mounted at heights shown on the drawings, or as directed by the Architect/Engineer.

E. Piping: All exposed piping and fittings to plumbing fixtures shall be chromium-plated. Lavatory, drinking fountain and sink P-traps shall be swivel pattern, 17-gauge minimum.

F. Manufacturer and Model: See Plumbing Fixture Schedule located on the drawings.

G. Provisions for the Handicapped: Lavatories shall have 27" clearance from the floor to the bottom of the apron. Exposed hot water and drain piping shall be insulated with pre-molded Trap Wrap insulation, #500 as manufactured by Brocar or approved equal. Urinals shall be mounted with the rim 17" above the floor. Water closets shall be mounted with the seat from 17" to 19" from the floor. Water coolers shall be specifically designed for use by handicapped persons and mounted with controls not more than 3' from the floor. This Contractor shall be familiar with and strictly follow all requirements and recommendations of the Americans with Disabilities Act (ADA).

PART 3 – EXECUTION

3.01 WATER SERVICE

A. The water service shall be constructed in conformance with paragraphs "Excavation" and "Backfilling" in Section 15050 – Basic Mechanical Materials and Methods, and the following:
   1. PVC Pipe and Fittings 4" and Smaller: Shall be Schedule 40 with cemented (solvent welded) joint slip socket type fittings, as specified in Section 15050 – Basic Mechanical Materials and Methods. PVC piping may be used up to 5' from the building line.
   2. From 5' outside the building line to the first shutoff valve in the building, the water piping shall be Type "K" annealed copper tube with flared brass compression fittings. Steel pipe sleeves shall be installed at all concrete slab/water penetrations 2" larger in diameter than the copper pipe. Copper pipe to be enclosed in 1" foam insulation to reduce contact with soil and pipe sleeves.
   3. Gate Valves: Valves shall be designed for a minimum water working pressure of not less than 150 lbs per square inch. Valves shall have joints as required for the piping in which they are installed. Gate valves shall have a clear waterway equal to the full nominal diameter of the valve and shall be opened by turning to the left. The operating nut or wheel shall have an arrow cast in the metal indicating the direction of opening. Each valve shall have the maker's initials, pressure rating and year in which manufactured cast on the body. Prior to shipment from the factory, each valve shall be tested by hydraulic pressure equal to twice the specified water working pressure. Valves shall be iron body,

brass mounted N.R.S. and shall conform to the Standard Specification of the American Water Works Association, 7F.1, or to the requirements of Federal Specification WW-V-58.

4. Valve Boxes: Valve boxes shall be of cast-iron or extension type with slide-type adjustment and with flared base. The minimum thickness of metal shall be 3/16". The cover shall have the word "Water" cast in the metal. Boxes shall be installed over each outside gate valve. The boxes shall be of such length as to provide, without extension, the minimum cover over the pipe required by the local plumbing code.
5. Installation: The water service shall be installed as indicated on the drawings and shall be valved as shown.
    a. Piping: Piping for the water service shall be of the type and materials specified herein. The pipe and accessories shall be of new and previously unused material. The full length of each section of pipe shall rest solidly upon the pipe bed, with recesses excavated to accommodate the joints. The interior of the pipe shall be thoroughly cleaned of all foreign matter before being lowered into the trench and shall be kept clean during laying operations by means of plugs or other approved methods. The pipe shall not be laid in water or when trench or weather conditions are unsuitable for the work. Water shall be kept out of the trench until installation is complete. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no trench water, earth or other substances will enter the pipe or fittings. Any section of pipe found to be defective before or after laying shall be replaced with new pipe without additional expense to the Owner.
    b. Shutoff Valve: The service line shall be connected to the main in conformance with city water department requirements and shall have a gate valve and valve box.
    c. Valve Box: When water main is located in a paved street having curbs, the valve box shall be located directly in back of the curb. Where no curbing exists, the valve box shall be installed in an accessible location, beyond the limits of streets, walks or driveways.
    d. Setting Valves and Valve Boxes: Valves and valve boxes shall be installed in the lines a shown on the drawings. Valves and valve boxes shall be set plumb and centered with valve boxes placed directly over the valves. Earth fill shall be carefully tamped around the valve box to a distance of 4' on all sides of the box or to the undisturbed trench face if less than 4'. Valves shall have the interiors cleaned of all foreign matter before installation. Stuffing boxes shall be tightened and the valve shall be inspected in opened and closed positions to see that all parts are in working condition.
    e. Pipe Joints: Before making joints, the socket and plain ends of the pipe shall be cleaned of foreign material. The spigot end of the pipe and the inside of the rubber ring gasket shall then be coated with approved lubricant with the pipe in approximate alignment. Then the spigot shall be positioned in the socket of the adjoining pipe and the spigot shall be forced into the socket using the proper assembly tools.
    f. Concrete Anchor Blocks: Shall be installed at all underground tees and elbow in water service to prevent the fittings from being blown off the lines when under pressure.
    g. Test: After the pipe is laid, the joints completed and the trench partially backfilled leaving the joints exposed for examination, the newly laid piping or any valved section of piping shall, unless otherwise specified, be subjected to a pressure test of 50 lbs per square inch in excess of normal operating static pressure at the points of reading. All exposed pipe, joints, fittings and valves shall be carefully examined during the open trench test. Joints showing visible leakage shall be made tight. Cracked or defective pipe, fittings or valves disclosed in the pressure test shall be repeated until the test results are satisfactory to the Inspector.
    h. Water Service Sterilization: The completed water service and water distribution system shall be sterilized with chlorine before acceptance for operation.

(1) Material – Hypochlorite: Liquid hypochlorite shall conform to the requirements of Federal Specification O-B-411, Grade D.

(2) Method: The amount of chlorine applied shall be such as to provide a dosage of not less than 100 parts per million. The chlorinating material shall be introduced to the water service in a manner approved by the Architect/Engineer. After a contact period of not less than eight (8) hours, the system shall be flushed with clean water until the residual chlorine is not greater than 0.2 parts per million. Valves shall be opened and closed during sterilization.

3.02 NATURAL GAS SERVICE

A. The natural gas service shall be constructed in conformance with paragraphs "Excavation" and "Backfilling" in Section 15050 – Basic Mechanical Materials and Methods and the following:

1. The natural gas service is intended for the distribution of natural gas and materials, appurtenances and workmanship used in the system shall be suitable for the accomplishment of this purpose. Any section of the gas service system that is found defective in material or workmanship before acceptance shall be corrected to the satisfaction of the Architect/Engineer at no additional cost to the Owner. The natural gas service, gas pressure regulator, gas meter and tapping of the existing main shall be furnished and installed by the Gas Company; cost accruing therefrom shall be included in the Contract. This Contractor shall furnish and install all piping from outlet of meters to all fixtures and equipment using gas as specified in paragraph "Natural Gas Piping."
2. Underground gas piping shall be ASTM A 53, Type E, Electric-resistance welded or Type S, Seamless; Grade B; Schedule 40 black steel. All underground gas piping and fittings shall have a factory-applied, corrosion-resistant, polyethylene protective coating. Pipe and fittings shall be treated with a compatible primer prior to tape application. The protective coating shall have a thickness of 20 mils; a synthetic adhesive, a water absorption of 0.02 percent maximum and a water vapor transmission rate of 0.10 gallon maximum per 24 hours per 100 sq. in.
3. Field-applied coatings shall be per ASTM D4397, polyethylene tape applied in number of layers and procedure required to provide properties equivalent to the factory-applied coating described above.

3.03 OUTSIDE SANITARY SEWERS

A. Sanitary sewers 5' or more outside the building shall be constructed in conformance with City Standards. and the following:

1. Cleanouts: Exterior cleanouts shall be furnished and installed at each change in direction of a horizontal run and at maximum intervals of 100'-0" in the horizontal lines or according to governing codes and ordinances. Cleanouts shall be of the same size as the pipe, at least 4" minimum, and shall be J.R. Smith Figure 4223-U, set in concrete pad (except in sidewalk to be flush with finished sidewalk), with vandal-proof screws, or the equivalent by Acorn, Wade or Zurn.

3.04 SANITARY DRAINAGE

A. Material: All above-ground sanitary drainage and vent piping shall be standard weight, galvanized steel pipe with black cast-iron drainage fittings; or service weight cast-iron soil pipe and fittings; or type DWV copper with cast-copper drainage fittings. Copper shall not be used for water closed or urinal waste or vent fixture connections.

All sanitary drainage piping underground shall be service weight cast-iron soil pipe and fittings. Cast-iron pipe shall extend 5' beyond the building line.

B. Installation: All horizontal drainage and vent piping shall be run at a uniform grade of not less than ¼" per foot of fall in the direction of flow, except as noted. Soil and waste vent pipes shall extend through the roof full size. All lavatories and sinks shall be connected to waste lines with TY fittings.

C. Pipe Joints: Joints in cast-iron soil pipe shall be made by using pipe and fittings with plain end spigots and positive, double-seal, elastomeric compression type gaskets conforming to ASTM C-564. Joints in "No-Hub" cast-iron pipe shall be made by use of "No-Hub" elastomeric gaskets and stainless steel clamps.

D. Vertical Stacks: Vertical stacks shall be supported at floors with clamp anchors as required to relieve joint stresses.

E. Traps: Traps shall be installed on all fixtures and inlets to drainage system except where traps are integral with equipment or fixtures. No fixture shall be double trapped. All exposed or accessible P-traps shall have bottom cleanout plugs.

F. Cleanouts: Cleanouts shall be furnished and installed on all vertical waste or soil stacks at a height of 30" above the finished floor at the base of each stack and at each change in direction of a horizontal run and at maximum intervals of 50'-0" in the horizontal lines. Cleanouts shall be of the same size as the pipe up to 4" and at least 4" for larger pipe.

Cleanouts in exterior locations shall be J.R. Smith Figure 4220, or the equivalent by Acorn, Josam, Wade or Zurn. Chamfered concrete pad 24" x 24" x 6" shall be poured around the cleanout.

Cleanouts in finished walls shall be J.R. Smith Figure 4452, or the equivalent by Acorn, Josam, Wade or Zurn.

Cleanouts in floors shall be J.R. Smith Figure 4020, or the equivalent by Acorn, Josam, Wade or Zurn with nickel alloy top.

Cleanouts in tile floors shall be J.R. Smith Figure 4040, or the equivalent by Acorn, Josam, Wade or Zurn.

G. Air Conditioning Equipment Drains: Air conditioning equipment drains shall be installed where required or shown on the drawings. All piping shall be type DWV copper with solder type copper fittings. From outdoor equipment, a drain valve shall be installed in the trap for winter drain down. Drain lines shall be run to the nearest roof drain for roof-mounted equipment.

3.05 FLASHING

A. Vents: Extend vents 12" above roof. Vents through the roof shall be flashed and counterflashed using four-pound sheet lead. Flashing shall extend at least 12" in all directions from the pipe and at least 12" above the roof. Counterflashing shall be turned down inside the top of the pipe and shall overlap the lower flashing by 4".

B. Floor Drains: All floor drains, except those in floor laid on the ground, shall be installed with four-pound sheet lead flashing extending 18" from the drain in all directions between the structural and finished floor.

C. Roof Drains and Overflow Drains: Roof drains and overflow drains shall be provided with four-pound sheet lead flashing extending a minimum of 10" beyond outer dimension of drain in all directions. Flashing shall be thoroughly mopped to roof.

3.06 WATER PIPING SYSTEM

A. Pipe and Fittings: All water piping, from the shut-off valve after the entry into the building, shall be hard-drawn copper water tubing, Type L with solder joint, wrought-copper fittings of same weight as tubing, as specified in Section 15050 – Basic Mechanical Materials and Methods and shall be installed above slab. Under slab is not allowed unless specifically shown on drawings and sleeved. Solder joints shall be made with 95-5 tin antimony solder and flux as recommended by the manufacturer and applied to clean surfaces only. Solder containing lead shall not be used. Pipe sizes shown on the drawings shall be nominal inside diameter unless otherwise indicated.

B. Precautions During Construction: Extreme care shall be taken during construction to keep dirt and foreign matter out of the systems. Stored pipe shall have open ends closed and all equipment shall have all openings protected. Each piece of pipe or equipment shall be visually examined as it is being installed and all dirt removed.

C. Exposed Pipe and Fittings: All exposed pipe and fittings in finished rooms used in connection with plumbing fixtures shall be chromium-plated brass pipe with plated, cast-brass fittings.

D. Valves: Shall be provided on all water piping wherever shown or specified, using adapters where required. All removable or replaceable equipment shall have shutoff valves. Valves shall be as specified in Section 15050 – Basic Mechanical Materials and Methods.

E. Water Piping Installation: The Contractor shall furnish and install all water pipe lines and risers necessary to supply all fixtures and equipment as shown or specified. All pipe shall be run as direct as possible, avoiding unnecessary offsets and shall be concealed in finished rooms unless shown or specified otherwise. Proper allowance shall be made for expansion and all lines and risers shall be blocked as may be necessary to prevent noise or vibration when water is turned on or off.

F. Pitch: All pipes shall be pitched as required to allow the system to be drained. Furnish and install ¾" hose end drain valves at all low points of the systems.

G. Branch Valves: Each branch shall be separately valved and all such valves shall be accessible.

H. Air Chambers: Air chambers 18" long and of the same size as the branches shall be placed vertically on the end of all supply branches to each fixture. All pipe lines shall be arranged to give ample room for the pipe insulation specified elsewhere.

I. Water Hammer Arrestors: Zurn "Shoktrol" or equal shall be installed at the end of each hot water and cold water branch. Arrestors shall be sized in accordance with manufacturer's sizing table.

3.07 NATURAL GAS PIPING

A. Furnish and install the natural gas distribution system from the gas meter to all gas using equipment as specified and shown on the drawings and in conformance with all applicable requirements of the Gas Company, the National Fire Protection Association, and local ordinances and codes.
   1. Materials: All gas piping shall be Schedule 40 black steel pipe as specified in Section 15050 – Basic Mechanical Materials and Methods. Pipe smaller than 2" shall have screwed fittings. All screwed fittings, except valves, shall be standard weight, beaded, melleable iron. Pipe 2" and larger shall have welded fittings. Welded fittings shall conform to ASA B-16-9. Valves shall be Dezurik Figure 425, or the equivalent by Rockwell or Homestead.

2. Installation: All piping shall be reamed to full size after cutting and all screwed joints shall be made up with teflon pipe thread tape applied to the male threads. Welded joints shall be made in accordance with HPACCA Standard Manual of Pipe Welding.
   a. All pipe shall be run true to line without pockets and with even pitch to a suitable point where an approved drain cock shall be provided.
   b. No unions shall be used in concealed piping. All outlets not connected to equipment or appliances when the Contractor has completed his work shall be closed with valves and plugs.
   c. Install a valve in each branch takeoff.
   d. All connections to gas-burning equipment shall be made by this Contractor. Each connection shall have a valve.
   e. Ferrous gas piping installed underground in exterior locations shall have a minimum of 24" earth cover and shall be protected from corrosion by approved factory-applied coatings, wrapping material, or by another approved manner.
   f. Underground ferrous gas piping shall be electrically isolated from the rest of the gas system with listed or approved isolation fittings installed a minimum of 6" above grade.

3.08 INSPECTIONS, TESTS AND ADJUSTMENTS

A. During the progress and after completion of the work included under this Specification, the Contractor shall make all required tests at his own expense in the presence of the Inspector.
   1. Materials: All materials shall, so far as possible, be subjected to standard test by the manufacturers before shipment.
   2. Sanitary and Storm Drainage: All drain, soil, waste, storm drainage and vent pipes (including branch bends and ferrule joints) shall be tested by closing all openings before any fixtures are set and filling the entire system with water or by air pressure tests as requested by the Inspector.
   3. Water Piping: All water piping shall be tested under minimum 125 psi pressure and shall be without indication of leak under that pressure. All leaks shall be closed to the satisfaction of the Inspector.
   4. Initial Flushing: The piping system shall be flushed out with water to remove as much loose material as possible. Strainers shall be in place, with start-up screen installed, during this operation and blowoffs and drains shall be open.
   5. Gas Piping: All gas piping shall be tested with compressed air at 25 psig and shall show no drop in pressure in a 2-hour period. Leaks shall be located by soap testing.
   6. Final Test of System: Under completion, the entire system shall be tested under operating conditions. Water shall be turned into all supply lines and all fixtures shall be demonstrated to operate properly. Valves and stops shall be adjusted, packed and repacked as may be required to eliminate leaks and produce proper flow. Piping shall be adjusted to provide proper circulation and to prevent hammer and thumping.
   7. Test of Water Closets and Urinals: Water closets and urinals shall be tested and adjusted to flush efficiently without undue noise.
   8. Inspection: Upon completion of the work, the Contractor shall obtain certificates of inspection and approval from all city and state authorities having jurisdiction. All certificates shall be turned over to the Inspector.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 15485 – MEDICAL GAS PIPING SYSTEMS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Special Conditions and Technical Specification sections, apply to work of this section.

1.02 SUMMARY

A. This section includes tubing, piping and related accessories for oxygen systems, designated "oxygen."

B. Related Sections: The following sections contain requirements that relate to this section:
   1. Division 11 Section "Medical Equipment" for medical equipment and outlets requiring medical gas services.
   2. Division 15 Section "Meters and Gages" for thermometers, pressure gages, and fittings.
   3. Division 15 Section "Supports and Anchors" for piping hangers and supports.

1.03 SYSTEM PERFORMANCE REQUIREMENTS

A. Installer Qualifications: Engage an experienced Installer of medical gas systems.
   1. The term "Experienced Installer" is specified in Division 1 Section "Reference Standards and Definitions."

B. Provide medical gas piping systems complying with requirements of NFPA 99C "Gas and Vacuum Systems" Level 3.

C. Provide compatible accessories, tube, fittings, and valves for each existing system.

1.04 SUBMITTALS

A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.

B. Product data for the following:
   1. Special purpose valves.
   2. Medical gas accessories.
   3. Storage tanks.

B. Maintenance data for inclusion in Operating and Maintenance Manuals.

1.05 DELIVERY, STORAGE AND HANDLING

A. Deliver and store large medical gas accessories on factory-installed shipping skids, tubing with sealing plugs in end or with end protection and small accessories in factory-fabricated fiberboard containers.
   1. Store pre-cleaned and sealed medical gas tube, fittings, valves and accessories with sealing plugs and sealing packaging intact.
   2. Label medical gas tube, fittings, valves and accessories that have not been pre-cleaned, and that have been pre-cleaned but have seal or packaging that is not intact, with temporary labels indicating that cleaning is required before installation

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Medical Gas Systems Accessories:
Amico Corporation

2.02 MEDICAL GAS TUBING, GENERAL

A. Copper Tube, Fittings, Valves and Piping Components: Factory-cleaned, -purged, and –sealed, and marked or labeled “CLEANED FOR MEDICAL GAS SERVICE,” “CLEAN FOR OXYGEN SERVICE,” “ACR/OXY,” “OXY,” “NITROGENIZED.”
1. Components required, but not available cleaned for medical gas use, may be provided, but must be cleaned before use as specified below under “Preparation.”

B. Pipe joining materials, specialties, and basic installation requirements are specified in Division 15 section “Basic Piping Materials and Methods.”

2.03 MEDICAL GAS TUBE

A. Soft Copper Tube: ASTM B 88, Type K, water tube, seamless, annealed temper.

B. Hard Copper Tube: ASTM B 88, Type K or Type L, water tube, seamless, drawn temper.

C. Pre-cleaned and Sealed Copper Tube: ASTM B 88, Type K or Type L, water tube, seamless, drawn temper, cleaned for medical gas use, purged, and with ends sealed.

D. ACR Copper Tube: ASTM B 280, “ACR,” air conditioning and refrigeration tube, seamless, hard-drawn temper, cleaned for medical gas use, purged, and with ends sealed. Tube cleaned only for refrigeration and air conditioning use may be provided, but must be cleaned before use.

2.04 MEDICAL GAS TUBE FITTINGS

A. Wrought-Copper Fittings: ASME B16.22, solder-joint, pressure type.

B. Bronze Tube Flanges: ASME B 16.24, Class 300.

C. Flexible Connectors: Bronze or stainless-steel flexible pipe connectors as specified in Division 15 Section “Mechanical Sound, Vibration, and Seismic Control.”

2.05 MEDICAL GAS TUBING JOINING MATERIALS

A. Brazing Filler Metals: AWS A5.8, BCuP (copper-phosphorus) Series alloys. Flux is prohibited, except when used with bronze fittings.

B. Threaded-Joint Tape: Polytetrafluoroethylene (PTFE) plastic.

C. Gasket Material: ASEM B16.21, nonmetallic, flat, asbestos-free, and suitable for oxygen use.

2.06 VALVES

A. General duty valves such as gate, globe, check, ball, and butterfly valves for use in associated piping such as water supply are specified in Division 15 Section "Valves."

B. Ball Valves 3" and Smaller: Bronze-body, full-flow, chrome-plated brass ball valve, with Buna-N or TFE seat seals and stem seals, blow-out-proof stem, threaded or braze-joint ends, locking-type handle, designed for quarter turn between open and closed positions and for 300 psig working pressure.
   1. Provide union-type body with bolted swing-away center section
   2. Provide factory-cleaned, factory-sealed (for oxygen use) and factory-installed, Type K or L copper tube extensions with pressure gage installed downstream from valve in pressure systems and upstream from valve in vacuum systems.

C. Safety Valves: Bronze body with settings to match system requirements.
   1. Pressure Safety (Relief) Valves: ASME construction.
   2. Vacuum Relief Valves: Equipment manufacturer's option.

D. Pressure Regulators: Brass or bronze body and trim, spring-loaded, diaphragm-operated, relieving type, manual pressure setting adjustment, rated for 250 psig minimum inlet pressure and capable of controlling delivered air pressure within 0.5 psig for each 10 psig inlet pressure.

E. Automatic Drain Valves: Corrosion-resistant metal body and internal parts, 200 psig minimum rated working pressure, capable of automatic discharge of collected condensate.

2.07 CASING FOR BURIED MEDICAL GAS TUBING

A. PVC (Polyvinyl Chloride) Plastic Pipe: ASTM D 1785, Schedule 80, for solvent cement joints.

B. PVC Plastic Pipe Fittings: ASTM D 2467, Schedule 80, socket type for solvent cement joints or threaded type for screwed joints.

C. PVC Plastic Solvent Cement: ASTM D 2564.

2.08 MEDICAL GAS SYSTEM ACCESSORIES

A. General: Provide the following medical gas system accessories from manufacturer of existing accessories, compatible with existing systems.

B. Service Outlets: Include brass valve and body block with seals in roughing-in and finishing assemblies, steel outlet box and cover plate; 3/8" Type K or L copper tube brazed to valve; and pressure outlets with automatic secondary service valve to prevent gas flow when primary valve is removed.
   1. Quick-Connect Coupling: Indexing to prevent interchange between services, constructed to permit one-handed connection and removal of equipment with positive locking ring when retains equipment stem in valve during use.
   2. DISS-Type Coupling: (Diameter Index Safety System) threaded indexing to prevent interchange between services, constructed to permit one-handed connection and removal of equipment.
      a. Oxygen Outlets: Refer to plans.
   3. Wall Outlet Cover Plates: One piece, stainless-steel plate with NAAMM AMP 503, No. 4 finish; metal with chrome-plated finish; or anodized aluminum with permanent, color-coded, medical gas identifying label matching corresponding outlets.

C. Service Hose Assemblies **(Owner provided and installed unless contracted separately)**: Color-coded, conductive, neoprene, 1/4" or 5/16" inside diameter, of lengths indicated, and with indexed or DISS-type end-connection fittings suitable for medical gas service indicated.

1. Hose Color: Black, when medical gas service is clearly indicated.
2. Oxygen Hose Assemblies: 8' long, with quick-connect oxygen fittings, valve on one end and stem on other end.

2.09 MEDICAL GAS STORAGE TANK SYSTEMS

A. Oxygen Reserve Supply: Manifolded header for high-pressure cylinders, fabricated of copper tubing or brass pipe and fittings and suitable for pressures up to 4000 psig. Header shall have inlet connections complying with CGA V-1, with individual inlet check valves, header shutoff valve, header pressure regulator, line shutoff valve or check valve, pressure gage and inlet connections for number of cylinders indicated.

2.10 IDENTIFICATION

A. Refer to Division 15 Section "Mechanical Identification" for piping (both underground and within building), tubing, valves, gages, alarms, accessories, and bulk storage tank labels.

PART 3 – EXECUTION

3.01 PREPARATION

A. General: Where factory-precleaned and –capped tubing and piping are not available, or when precleaned tubing and piping must be recleaned because of exposure, perform the following procedures:

1. Clean medical gas pipe and pipe fittings, tube and tube fittings, valves, gages and other components of oil, grease, and other readily oxidizable materials as required for oxygen service in accordance with GCA G-4, 1-85 "Cleaning Equipment for Oxygen Service."
2. Wash medical gas piping, tubing and components in hot alkaline cleaner-water solution of sodium carbonate or trisodium phosphate in proportion of one pound of chemical to three gallons of water.
   a. Scrub to ensure complete cleaning.
   b. Rinse with clean hot water after washing to remove cleaning solution.

3.02 TUBING APPLICATIONS

A. General: Refer to Part 2 of this section for the following materials.

B. Interior: Use "Precleaned and Sealed Copper Tube" with wrought copper fittings and brazed joints.

C. Buried: Use "Soft Copper Tube" with wrought copper fittings and brazed joints.

3.03 TUBING JOINT CONSTRUCTION

A. Requirements for brazed, threaded and flanged joint construction are specified in Division 15 Section "Basic Piping Materials and Methods."

3.04 CASING JOINT CONSTRUCTION

A. Joint PVC protective casing pipe and fittings with threaded or solvent cement joints.

1. Threaded Joints: Conform to ASME B1.20.1, "Tapered Pipe Threads" for field-cut threads. Join pipe and pipe fittings as follows:

a. Note the internal length of threads in fittings and proximity of internal seat to determine how far pipe should be threaded into fitting.
b. Align threads at point of assembly.
c. Damaged Threads: Do not use pipe with damaged threads.

2. Solvent Cement Joints: Conform to ASTM D 2855.

3.05 TUBING INSTALLATION, GENERAL

A. Basic installation requirements are specified in Division 15 Section "Basic Piping Materials and Methods."

B. Install supports and anchors in accordance with Division 15 Section "Supports and Anchors."
1. Spacing Between Hangers: As described in NFPA 99C for Level 3 installations.

C. Valve Applications: Use ball valves specified in this section for main shutoff and zone valve duties.

D. Install thermometers and pressure gages in accordance with Division 15 Section "Meters and Gages."

E. Install buried medical gas tubing in a conduit fabricated with PVC pipe and fittings. Do not extend casing through foundation wall.

3.06 ACCESSORIES INSTALLATION

A. Furnish number and type of complete, non-interchangeable service outlets indicated to manufacturer of equipment specified in other sections requiring service outlets that will be installed by the equipment manufacturer. Service outlets shall be same as outlets specified in preceding "Service Outlets" paragraph.

B. Install accessories in accordance with NFPA 99C and manufacturer's printed installation instructions.

C. Install manifolds firmly anchored and with seismic controls as indicated.

3.07 MEDICAL GAS STORAGE TANK INSTALLATION

A. Install storage tanks furnished by others.

B. Install storage tanks plumb and level, firmly anchored, in locations indicated. Orient so controls and devices needing servicing are accessible.

C. Install storage tanks firmly anchored and with seismic controls as indicated.

3.08 CONNECTIONS

A. Install tubing and piping adjacent to equipment to allow servicing and maintenance.

B. Connect medical gas tubing to equipment, gas manifolds and accessories with unions. Install with ball valves and strainers.

3.09 LABELING AND IDENTIFICATION

A. Install labeling on valves, valve box covers and alarm panels in accordance with requirements of NFPA 99C.

B. Captions and Color Coding: Use the following or similar medical gas captions and color coding for accessories when specified and where required by NFPA 99C.
   1. Oxygen: White letters on green background.

3.10 FIELD QUALITY CONTROL

A. System Clearing: Purge medical gas system tubing using oil-free dry air or nitrogen after installation of tubing but before installation of service outlet valves, alarms and gages.

B. Pressure Test: Subject each section of each system, except high-pressure air and nitrogen, to test pressure of from 150 psig to 200 psig and high-pressure air and nitrogen systems to test pressure of 250 psig with oil-free dry air or nitrogen before attachment of system components after installation of station outlets with test caps (when supplied) in place and before concealing piping system. Maintain test until joints are examined for leaks by means of soapy water.

C. Standing-Pressure Test: Install assembled system components after testing individual systems as specified above. Subject systems to 24-hour standing-pressure test at 20% above normal line pressure

but not less than 66 psig. Subject vacuum and evacuation systems to 12 to 18” of mercury minimum vacuum in lieu of pressure test.

D. Repair leaks and defects with new materials and retest system until satisfactory results are obtained.

E. Repair medical gas systems and replace components that fail tests specified.

3.11 COMMISSIONING

A. Provide the services of a factory-authorized service representative to inspect installation and to provide start-up service.

B. Operate and adjust operating and safety controls. Replace damaged and malfunctioning control and equipment discovered by the service representative.

C. Checks Before Start-Up: Perform the following final checks before start-up:
   1. Verify that specified tests of piping systems are complete.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 15880 – AIR DISTRIBUTION

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Section 15010, Basic Mechanical Requirements, is a part of this section of the Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Refer to Section 15050 – Basic Mechanical Materials and Methods.

B. Refer to Section 15250 – Mechanical Insulation.

C. Refer to Section 15990 – Testing, Adjusting and Balancing.

D. Refer to Mechanical Equipment Schedule located on the drawings.

1.03 WORK INCLUDED

A. The work under this section shall include furnishing and installing a complete air distribution system including all heating ventilating and air handling equipment, ductwork and accessories as specified and shown on the drawings for the heating ventilating and air conditioning systems.

PART 2 – PRODUCTS

2.01 ROOFTOP HEATING AND AIR CONDITIONING UNIT(S)

A. General: Unit shall be of the single-zone package type combination air-to-air cooling with indirect gas heat and shall be mounted on a full perimeter roof curb. Unit shall be AGA certified, ARI rated and UL certified. Unit shall be of manufacturer and model as indicated in the Mechanical Equipment Schedule.

B. Heating and Cooling Capacities: Shall be as shown on the Mechanical Equipment Schedule.

C. Unit Cabinet: Shall be constructed of galvanized steel, bonderized and coated with baked enamel finish. Blower compartment shall be insulated with ½" fiberglass insulation. Aluminum foil faced fiberglass insulation shall be used in furnace compartment. Cabinet shall be designed for horizontal discharge as shown on drawings.

D. Compressor: The unit shall contain a welded, full hermetic compressor with suitable vibration isolators and shall have a 5-year warranty. Compressor shall have a factory-installed temperature-actuated crankcase heater.

E. Coils: Shall be constructed of aluminum plate fins mechanically bonded to copper tubes with all joints brazed.

F. Fans and Motors: The indoor air fan shall be of the forward-curved, centrifugal-type with alternate belt drive and motor. Blower shall have corrosion-resistant finish and be dynamically balanced.

G. Outdoor Air Fan: Shall be of the propeller type, powered by a direct drive motor, discharging upward and be dynamically balanced.

H. Heating Section: Heat exchanger shall be of tubular sectional design and constructed of aluminized, 20-gauge steel. Burners shall be of the in-shot type, constructed of aluminized steel. Unit shall include induced draft combustion with a direct-spark ignition system and redundant main gas valve.

I. Economizer: Shall have return air and outside air dampers, outdoor air filter and hood and a fully-modulating electric control system with ambient air temperature control with adjustable set point. Economizer shall be capable of introducing up to 100% outdoor air and shall be of the integrated type, capable of simultaneous economizer and compressor operation. Unit shall be equipped with a gravity relief damper.

J. Filters shall be 2" thick fiberglass throwaway type. Filter face velocity shall not exceed 360 FPM at nominal air flows and only one filter size shall be required.

K. A full perimeter roof curb shall be provided and installed with the Air Conditioning unit. The curb shall be constructed of 16 gage galvanized steel with wood nailer strip and 1" fiberglass side wall insulation.

L. Controls and safeties shall include the following:
   1. Unit controls shall be complete with self-contained low voltage control circuit.
   2. Unit shall incorporate the following solid state compressor protections with reset capability at space thermostat.
      a. Compressor over-temperature, overcurrent.
      b. Low pressure switch.
      c. Freezestat evaporator coil.
      d. High pressure switch.
   3. Heating section shall be provided with the following minimum protections:
      a. High temperature limit switch.
      b. Induced draft motor centrifugal switch.
      c. Flame rollout switch (manual reset).
      d. Flame proving controls.
   4. Compressor Cycle Delay: Compressor shall be prevented from restarting for a minimum of 5 minutes after shut-down.
   5. Space thermostat shall be a 2-stage heating/2-stage cooling electronic programmable wall-mounted thermostat with a system "HEAT-COOL-AUTO-OFF" and a fan "ON-AUTO" switching subbase. Thermostat shall be supplied and mounted by the Mechanical Contractor. Wiring shall be by the Electrical Contractor under the supervision of the Mechanical Contractor. Proper operation of the thermostat is the responsibility of the Mechanical Contractor. The Owner shall be instructed on the use of all thermostat features by the Mechanical Contractor.

2.02 ROOF EXHAUST FANS – CENTRIFUGAL TYPE

A. Roof Exhaust Fans: Shall be installed as shown on the drawings and shall be of the type, wheel size, manufacturer and capacity shown on the Mechanical Equipment Schedule. Fans shall be of the centrifugal type, belt-driven or direct driven as indicated on the Mechanical Equipment Schedule. V-belt drives shall be designed for 50% overload and shall have adjustable pitch motor sheave. Motors shall be mounted on adjustable bases. Housings shall be fully weatherproofed and all metal parts exposed to air stream shall be given a sprayed-on insulating undercoating. Outlets shall be provided with removable bird screens. Units shall be mounted on approved vibration isolating bases.

Fan bearings shall be ball bearing type and provided with adequate and accessible means of lubrication. Each unit shall have a fused or thermal element type disconnect located in the

motor compartment. Fans shall be quiet in operation. Fan housings shall be easily removable for access to all parts.

B. Dampers: Shall be motorized type furnished by the fan manufacturer.

C. Roof Curbs: Shall be of prefabricated metal type and designed for mounting furnished roof exhaust fans. Curbs shall be of the insulated type with insulating lining. Curbs shall be designed for flashing to the roof in an approved manner with a raised cant at a height to match the roof insulation. Roof curbs shall be furnished with nailer strips, gasketing material and drawn-down lugs to ensure a watertight bond. Curb shall have adequate means for mounting dampers where dampers are specified or shown on the drawings.

2.03 CEILING TYPE EXHAUST FANS

A. Furnish and install ceiling type exhaust where indicated on the drawings. Fans shall be of the centrifugal type as shown on the drawings. Fans shall be quiet in operation, shall have gravity type dampers and roof outlets. Fans shall be of capacity and manufacturer on the Mechanical Equipment Schedule.

2.04 REGISTERS

A. Furnish and install all registers for openings as indicated on the drawings. Registers are indicated by the letter “R”. Furnish complete units with frames and opposed blade dampers with removable key damper operators. Registers shall be of the manufacturer indicated on the Mechanical Equipment Schedule.

B. Finish for steel registers shall be factory-applied white baked enamel. Plaster frames shall be furnished for plaster walls and ceilings.

2.05 GRILLES

A. Furnish and install all grilles for opening as indicated on the drawings. Grilles are indicated by the letter “G”. Furnish complete units with frame and blades. Grilles shall be of manufacturer indicated on the Mechanical Equipment Schedule.

B. Finish for steel grilles shall be factory white baked enamel. Plaster frame shall be furnished for plaster walls and ceilings.

2.06 DIFFUSERS

A. Furnish and install all diffusers as indicated on the drawings. Sizes, types and capacities shall be as shown on the drawings. Diffusers shall have equalizing deflectors to provide uniform air distribution and to allow for directional control. Diffusers shall be installed symmetrically with ceiling layout and lights. Volume dampers shall be furnished for diffusers as indicated in the Mechanical Equipment Schedule. Diffusers shall be of manufacturer indicated on the Mechanical Equipment Schedule.

B. Finish for diffusers shall be factory-applied white baked enamel. Plaster frames shall be provided for diffusers in plaster ceilings.

2.07 COMBINATION FIRE/SMOKE DAMPERS

A. Furnish and install at locations shown on plans, or as required by code combination fire/smoke dampers meeting the following specifications. Frame shall be galvanized steel formed into a structural hat channel shape with tabbed corners for reinforcement.

B. Each combination fire smoke damper shall be 1-1/2 hour fire rated under UL Standard 555 or greater where noted on architectural plans, and bear a UL label attesting to same. Damper manufacturer shall have tested, and qualified with UL, a complete range of damper sizes covering all dampers required by this specification. The leakage rating under UL555S shall be Leakage Class II (10 cfm/ft. at 1" w.g.)

C. In addition to the leakage ratings already specified herein, the dampers and their actuators shall be qualified under UL555S to an elevated temperature of 250º F, 350ºF, or 450ºF depending upon the actuator. Appropriate electric "Firestat" operator shall be installed by the damper manufacturer at time of damper fabrication. Damper and actuator shall be supplied as a single entity which meets all applicable UL555 and UL555S qualifications for both dampers and actuators. Manufacturer shall provide factory assembled sleeve of 16" minimum length (contractor to verify requirement). Factory supplied caulked sleeve shall be 16 gage for dampers up to 36" wide by 24" tall and 14 gage above 36" wide X 24" tall.

D. Combination Fire/Smoke dampers shall be Ruskin FSD6O rectangular dampers and Ruskin FSDR25 for round dampers or approved equal with correct mounting frames and sleeves for actual installation. Combination Fire/Smoke dampers for corridors ceiling shall be Ruskin FSD36 with internally mounted actuator.

E. Each combination fire and smoke damper shall include an integral factory furnished and installed duct smoke detector compatible with the building fire alarm system. Assembly by Ruskin DSDN or approved equal.

F. Size of access doors in ductwork shall be 2 inches less than the width of the duct by 12 inches, up to a maximum size of 24 inches by 24 inches.

2.08 FIRE DAMPERS

A. Furnish and install at locations shown on the drawings or as required by code fire dampers meeting the following requirements. Provide access doors at all fire damper locations of sufficient size to allow easy resetting of fire damper linkage. Fire damper links shall be of the test strength recommended to prevent nuisance closing. All fire dampers shall conform to the requirements of NFPA Pamphlet 90A and shall meet the required UL Standard 555.

B. High Velocity Round or Oval Fire Dampers: High velocity fire dampers shall be of the folding blade type designed for minimum static pressure drop. Fusible links shall be accessible from either side of the damper. Each damper shall be furnished complete with a galvanized welded steel sleeve (round or oval) and closure compartment to house the folded blades. Fire dampers shall be Ruskin FD35 with 165°F fusible link or approved equal.

C. Rectangular Fire Dampers: Fire dampers for rectangular ductwork shall be of the folding blade type with the hinged blades completely out of the air stream of the single hinged blade type. Fusible links shall be accessible from either side of the damper. Each damper shall have a galvanized welded steel sleeve (rectangular or square) and closure compartment to house the folded blades. Rectangular fire dampers mounted in the horizontal plane are to be spring loaded. Fire dampers shall be Ruskin DIBD with 165°F fusible link or approved equal.

D. Provide access doors at all fire damper locations of sufficient size to allow easy resetting of fire damper linkage. Size of access doors in ductwork shall be 2 inches less than the width of the duct by 12 inches, up to a maximum size of 24 inches by 24 inches.

E. Each fire damper shall be provided with spare fusible link(s) secured to the damper.

2.09 DUCT SMOKE DETECTORS

A. All smoke detectors shall be listed by Underwriters Laboratories Inc. for use in air handling systems. They shall be designed to provide detection of combustion gases, and fire and smoke in air conditioning and ventilating duct systems in compliance with the National Fire Protection Associations. Further, they shall contain an ionization-type detector and air-sampling chamber with sampling tubes extending the width of the air duct (maximum of 9'-3/4").

B. The detector used with a remote power supply and control circuitry shall perform the detection functions and operate its own integral SPDT alarm contacts as well as transmit signals to activate the trouble and alarm contacts. The integral alarm contacts shall be capable of handling up to 5 amperes resistive at 120 VAC. The detector shall be suitable for outdoor installation in a NEMA 3R enclosure as shown on the drawings.

C. Alarm condition pilot lights will be visible on the front of all detectors.

D. The duct smoke detectors shall be furnished and installed by the Mechanical Contractor. Shut-down of the supply fan shall be through interlock wiring to the duct smoke detector. Interlock wiring to the supply fan and power wiring is by the Electrical Contractor.

PART 3 – EXECUTION

3.01 DUCTWORK CONSTRUCTION

A. Adhere to drawings as closely as possible. If approved, the Contractor may vary run and shape of ducts and make offsets during progress of work if required to meet structural or other interferences.

B. Install ductwork in adherence to ceiling height schedules indicated, consulting with other trades, and in conjunction with them, establish necessary space requirements for each trade so as to maintain required clearances.

3.02 STATIC PRESSURE CLASS 1" WG DUCTWORK

A. All ductwork, other than that specified elsewhere, shall be considered to be static pressure Class 1" wg. (SPC 1) ductwork, and shall be furnished and installed as shown on the drawings as specified below.

B. Materials: All SPC 1 ducts, except flexible ducts, shall be constructed of galvanized steel sheets with galvanized steel bracing and supports. Gauges of steel and aluminum (and joints and reinforcements for round and rectangular ducts) shall conform to tables in the HVAC Duct Construction Standards of the Sheet Metal and Air-Conditioning Contractors National Association Edition 1 1985. Rectangular ducts shall conform to Table 1-4 and round ducts shall conform to Table 3-2 and 3-3.

C. Flexible Ductwork: May be used for final connections to variable volume boxes, individual air diffusers, grilles and registers where shown on the drawings. Flexible ductwork connected to insulated ducts shall have 1" thick insulation. All flexible ducts shall conform to NFPA 90A and shall be listed under Underwriters Laboratories, Inc. 181. Maximum length of any flexible duct section shall be 4 feet.

D. Support: All ductwork shall be substantially and neatly supported on heavy iron straps or angles, riveted or bolted to ducts and properly anchored to the construction so that horizontal ducts are without sag or sway, vertical ducts are without buckle and all ducts are free from the possibility of deformation, collapse or vibration. See SMACNA Section 4.

E. Seams and Joints: Longitudinal seams shall be Pittsburgh seams, or grooved seams.
   1. Transverse joints in low pressure round ducts shall be slip type, secured with sheet metal screws equally spaced on 6" centers maximum with a minimum of three screws per joint. Exposed inside edge of duct at joint shall point in direction of air flow. Transverse joints in rectangular ducts shall conform to Table 1-11 in SMACNA.
   2. All duct joints and seams in round and rectangular ducts shall be sealed with an approved duct sealer.
   3. All duct joints and seams for ductwork located outside the building shall be sealed watertight with Hardcase DT tape and RTA-50 adhesive applied in complete accordance with manufacturer's instructions.

F. Terminology: Terminology and construction of joints and seams shall be recommended in the HVAC Duct Construction Standards as published by SMACNA, Edition 1 1985.

G. Fittings:
   1. Elbows: All elbows shall have an inside radius not less than the width of the ducts in the direction of the curve. See SMACNA Figure 2-2, Type RE-1.
      Where space conditions do not permit a full radius elbow, changes in direction shall be made using mitered elbows with multiple turning vanes (SMACNA Figure 2-3 and 2-4) or short radius elbows with one turning vane placed at a distance from the inside radius equal to 1/3 the duct width. The inside radius of short radius elbows shall be 2/3 the duct width. The turning vane shall extend 1/3 the duct width past the elbow curvature in the direction of air flow. See SMACNA Figure 2-2, Type RE-3. Elbows for use in SPC 1 round ducts up to 8" diameter may be short radius, adjustable type elbows.
   2. Transitions: Full duct cross-section areas shall be maintained through transitions. Angles between centerline and side of diverging transition shall be no greater than 15º. Angle between centerline and side of converging transition shall be no greater than 30º.
   3. Offsets: Shall be constructed with inside radii not less than the width of the duct in the direction of the curve. Mitered elbow or short radius elbows, as specified under paragraph "Elbows" above, may be used where space is restricted.
   4. Taps: Branch tap-in of small branch ducts to large main ducts shall be 45º entry tap-ins constructed as shown in SMACNA Figure 2-8.
      Collar taps for air outlet connections on exposed ductwork shall be made with joint connection folded over the inside of the main duct and without exposed flanges. Outlet collar shall be of the same dimensions as outside dimension of air outlet frame.

H. Outlet Frames: Where duct terminate at grilles, registers or screens, they shall be furnished with angle or channel iron frames with mitered, welded corners and with suitable provisions for attaching said grilles, registers or screens.

I. Dampers: Motorized dampers occurring in ductwork will be furnished as specified in the temperature control section, 15950. Other dampers shall be as shown on the drawings.

J. Access Doors: Hanged, airtight, access doors shall be provided where required for access to control elements or for inspection. Doors shall be adequately sized for ease of maintenance of concealed items and shall have airtight gaskets.

K. Exposed Round Ductwork: Transverse spiral and round duct joints shall be made with the Spiralmate Round Duct Connector or an approved equal. The Spiralmate components shall be of standard catalog manufacturer as supplied by Ductmate Industries, Inc.

   The installation of the Spiralmate Round Duct Connector shall be in accordance with the manufacturer's printed instruction and installation manuals.

   The Spiralmate Round Duct Connector consists of the following components:
   1. Two mating round duct connector flanges with an integral sealant.

2. A gasket between the two mating flanges.
3. A roll-formed closure ring that is drawn tight with a bolt and nut.

3.03 EQUIPMENT HOUSINGS

A. General: Equipment housings shall be provided for the mixing dampers as shown on the drawings and as hereinafter specified. This Contractor shall cooperate with all other trades in the construction of the housings and shall furnish all required dimensions. All sheet metal housings, steel framing for bracing, equipment supports and metal partition walls shall be furnished and installed by this Contractor in accordance with the following.

B. Materials: All sheet metal and steel framing material shall be galvanized. Casings shall be constructed of 18-gauge sheet metal with structural iron stiffeners.

C. Construction: Entire housing shall be made airtight, suitably braced with structural iron members, and free from breathing or vibration. Housing shall terminate at masonry walls and at floors with 1-1/2" x 1-1/2" x 3/16" angles.

D. Housing shall be internally insulated as specified in paragraph "Insulating Duct Lining."

E. Openings for unit connections, dampers and access doors shall be framed with angle iron stiffeners.

F. Housings shall be as detailed on the drawings. The Contractor shall submit shop drawings for approval before fabricated.

G. Access doors shall be installed where shown and as required for access to all equipment. Doors shall be complete with hinges, gaskets and "Ventlock" No. 205 latches as manufactured by Ventfabrics of Chicago, Illinois, or equal.

3.04 FLEXIBLE CONNECTIONS

A. Flexible connections shall be installed between all ductwork and air handling equipment. Connections shall be of fireproof material and suitable for temperatures and pressure involved. Flexible connections shall have at least 1" of slack material when installed.

3.05 VOLUME DAMPERS

A. Volume dampers shall be installed where shown on the drawings. Volume dampers shall be two gauges heavier than the duct in which they are installed and shall be reinforced to prevent vibration and noise. All volume dampers occurring in concealed ductwork shall be installed with shafts vertical. In ducts over 14" width, use multi-louvered opposed blade dampers. Provide Young Regulator Model 301 flush cup regulator for dampers above gyp board or plaster ceilings.

3.06 INSULATING DUCT LINING

A. General: Insulating duct lining shall be provided in locations noted on the drawings and specified below. Duct sizes shown on the drawings shall be inside dimensions of acoustic duct liner. Insulation and materials shall be Manville, Knauf, Owens-Corning or Armstrong. All insulation shall have composite (insulation and facing) fire and smoke hazard ratings as tested by procedure ASTM E-84, NFPA 255 and Underwriters Laboratories 723 not exceeding a "flame spread" of 25 and "smoke developed" of 50.

1. Accessories, such as adhesives, mastics, cements, etc. shall have the same component ratings as listed above.

2. Any treatment of jackets or facings to impart flame and smoke safety shall be permanent. The use of water-soluble treatments is prohibited.

B. Material: Internal duct liner insulation shall be made from inorganic glass fibers bonded by a thermosetting resin. The air stream side surface shall be smooth with a firmly bonded, fire resistant coating to prevent erosion of the insulation. The density shall be 1-1/2 lb per cubic foot with a thickness of 1". The R-value shall not be less than 4.0 at 75º F.

The duct liner insulation shall satisfactorily operate up to velocities of 5000 fpm and temperature to 250º F. The smooth surface shall offer minimum resistance to air flow and have efficient sound absorption abilities. The noise reduction coefficient rating shall not be less than 0.70.

The duct liner insulation shall satisfy the fire rating requirements listed above and also satisfy NFPA 90A and 90B standards. The duct liner insulation shall comply with Federal Specifications HH-I-545B (ASTM C 1071, Type I) and SMACNA Application Standards for Duct Liners.

C. All acoustic duct liner shall be 1" thick unless otherwise noted and shall be installed where shown on the drawings and for the ducts scheduled below:

System	Location
Supply Air System	All square and rectangular ducts
Return Air System	All square and rectangular ducts

D. Installation: Acoustic duct liner shall be adhered to interior of ducts with adhesive, completely coating all duct surfaces. Mechanical fasteners shall be used on top and sides for ducts exceeding 24" in height or width and shall be spaced 18" on centers.

3.07 FLUES

A. Furnish and install a prefabricated metal, Type B flue where shown on the drawings for the gas-fired furnace. Installation shall conform to manufacturer's recommendations and the National Board of Fire Underwriters. Flue shall be flashed at the roofline and shall have a weatherproof cap. Flue shall be Metalbestos, or equal.

3.08 VENT CONNECTIONS

A. Vent connections, from the draft diverters to the chimney, shall be made with galvanized steel ducts as specified for ductwork in this section.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 15990 – TESTING, ADJUSTING AND BALANCING

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

A. Section 15010, Basic Mechanical Requirements, is a part of this section of the Specifications.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Refer to Section 15880 – Air Distribution.

B. Refer to Division 16 – Electrical.

1.03 JOB CONDITIONS

A. Heating, ventilating and air conditioning equipment shall be completely installed and in continuous operation as required to accomplish the testing, adjusting and balancing work specified.

B. Testing, adjusting and balancing shall be performed when outside conditions approximate design conditions indicated for cooling function.

1.04 QUALIFICATIONS

A. The Contractor shall have an independent testing and balancing agency, approved by the Engineer, which specializes in the testing and balancing of heating, ventilation and air conditioning systems. All work by this agency shall be done under the direct supervision of a qualified Test and Balance Engineer employed by the agency. All instruments used by this agency shall be accurately calibrated and maintained in good working order. The testing and balancing agency shall submit proof of having successfully completed at least five projects of similar size and scope.

1.05 SUBMITTALS

A. Data Sheets:
   1. Submit data sheets on each item of testing equipment required.
   2. Include name of device, manufacturer's name, model number, latest date of calibration and correction factors.

B. Report Forms:
   1. Submit specimen copies of report forms.
   2. Forms shall be 8-1/2" x 11" paper for looseleaf binding with blanks for listing of the required test ratings and for certification of report.
   3. Reports shall be on form published by the AABC, or equal.

1.06 OPERATING INSTRUCTIONS

A. Reports shall be certified by the testing engineer that the methods used and the results achieved are as specified.

1.07 MEASUREMENT AND PAYMENT

A. Should corrective measures caused by faulty installation require retesting, adjusting and balancing, such work shall be at no additional expense to the Owner.

B. Corrective measures, other than the above, shall be made only as directed by the Architect/Engineer in writing and shall be covered by Change Order at an agreed amount before corrective work is done.

PART 2 – PRODUCTS

2.01 AIR BALANCE INSTRUMENTS

A. Alnor velometer with probes and Alnor pitot tube.

B. Rotating vane anemometer. Taylor Instrument Company, 4" size.

C. ASHRAE Standard pitot tubes, stainless steel 5/16" outside diameter, lengths 18" and 26", Dwyer Model 160.

D. Magnehelic differential air pressure gauges. 0" to 0.5", 0" to 1.0" and 0" to 5.0" water pressure ranges, each arranged as a standard pitot tube, Dwyer Series 2000.

E. Combination inclined-vertical portable manometer. Range 0" to 5.0" water, Dwyer No. 400.

F. Portable flexible U-tube manometer. Magnetic mounting clips, range 18" to 0.18" water, Dwyer No. 1215-20.

2.02 SYSTEM PERFORMANCE MEASURING INSTRUMENTS

A. Insertion thermometers with graduation at 0.5º F for air and 0.1º F for water.

B. Sling psychrometer.

C. Tachometer, centrifugal type.

D. Revolution counter.

E. Clamp-on volt/ammeter, minimum ranges: 0/600 volts on three scales; 0/800 volts on five scales.

PART 3 – EXECUTION

3.01 AIR DISTRIBUTION AND HYDRONIC SYSTEMS

A. Test, adjust and balance systems in accordance with AABC National Standards for Field Measurements, Total System Balance, Air Distribution and Hydronic Systems, of latest issue.

3.02 REFRIGERATION CAPACITY TESTS

A. Conduct refrigeration capacity test in each condensing unit during a period of stable operation.

B. Verify settings of safety and operating controls.

C. Make three trial observations, record readings of:
   1. Ambient air temperature.
   2. Air temperatures entering and leaving cooling coils, accurate to 1º F.
   3. Air flow through cooling coils, accurate to nearest 100 CFM.

4. Refrigerant temperatures accurate to 1º F.
5. Compressor power input readings of volts and amperes in each phase, accurate to nearest 100 VA.

D. Performance Report: Use readings to calculate tons of refrigeration capacity along with power input required for that capacity along with power input required for that capacity and compare with manufacturer's ratings to determine percent effectiveness.

3.03 SUBMITTAL OF REPORTS

A. Fill in test results on approved forms. Submit three certified copies of the required test reports to the Architect/Engineer for approval.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16010 – GENERAL PROVISIONS

PART 1 - GENERAL

1.01 The general provisions of the Contract, including General Conditions, Special Conditions and Technical Specifications apply to the work specified in this section.

1.02 ELECTRICAL DIVISION INDEX

16010 General Provisions
16110 Raceways
16120 Wires and Cables
16130 Outlet Boxes
16133 Cabinets
16140 Wiring Devices
16150 Motors
16155 Motor Starters
16160 Panelboards
16170 Motor and Circuit Disconnects
16181 Fuses
16410 Electrical Service
16450 Grounding
16460 Transformers
16500 Lighting Equipment
16501 Lamps
16502 Ballasts and Accessories
16511 Fluorescent Fixtures
16722 Fire Alarm System
16740 Telephone System

1.03 REQUIREMENTS

A. Furnish all labor, materials, service, equipment and appliances required to complete the installation of the complete Electrical System in accordance with the Specifications and Contract Drawings.

B. Refer to the Table in Division 15, Section 15902, 1.02 A for specific direction on items to include or exclude from this work.

1.04 REQUIREMENTS OF REGULATORY AGENCIES AND STANDARDS

A. Regulatory Agencies: Installation, materials, equipment and workmanship shall conform to the applicable provisions of the National Electrical Code (NEC), the National Electrical Safety Code (NESC) and the terms and conditions of the Electrical Utility and other authorities having lawful jurisdiction pertaining to the work required. All modifications required by these codes, rules, regulations and authorities shall be made by the Contractor without additional charge.

B. Underwriters Laboratories (UL) or Factory Mutual (FM): All materials, appliances, equipment or devices shall conform to the applicable standards of Underwriters Laboratories, Inc. or Factory Mutual, Inc. The label of, or listing by, UL or FM is required.

C. Standards: Where referenced in these Specifications or on the Drawings, the publications and standards of the following organizations shall apply: Joint Commission on Accrediation of Healthcare Organizations (JCAHO), American Society of Testing and Materials (ASTM), Insulated Power Cable Engineers Association (IPCEA), National Fire Protection Association

(NFPA), American National Standards Institute (ANSI), and National Electrical Manufacturers Association (NEMA).

D. Conflicting code requirements shall be brought to the attention of the Architect. Where two or more codes apply, the most stringent of the codes shall govern.

1.05 SUBMITTALS AND SUBSTITUTIONS

A. Material List: Within 30 days of Contract Award or Notice to Proceed and before material is ordered, the Contractor shall submit for approval a list of all proposed material and equipment, indicating manufacturer's name and general description.

B. Shop Drawings: Submit for approval a minimum of six copies of all shop drawings no later than 30 days after the material list has been approved and prior to ordering any material. Show complete outlines, dimensions, electrical services, control diagrams, electrical characteristics of special nature or critical to the installation and pertinent data required for installation. Indicate in the transmittal that submittal has been reviewed and accepted and all Contract deviations identified. In addition to specific references or requests; submit shop drawings for the following applicable items: panelboards, lighting fixtures, transformers, primary cable and gear, alarm systems and all special equipment.

C. Substitutions may be requested in accordance with Section 01640, 1.04.

PART 2 PRODUCTS

2.01 EQUIPMENT REQUIREMENTS:

A. The Electrical requirements for equipment specified or indicated on the Drawings are based on information available at the time of design. If equipment furnished for installation has Electrical requirements other than indicated on the Electrical Drawings, the Contractor shall make all adjustments to wire and conduit size, controls, overcurrent protection and installation as required to accommodate the equipment supplied, without additional charge to the Owner. All adjustments to the Drawings reflecting the Electrical System shall be delineated in a submittal to the Architect immediately upon knowledge of the required adjustments. The complete responsibility and costs for such adjustments shall be assigned to the respective section of these Specifications in which the equipment is furnished.

2.02 MATERIALS

A. All similar materials and equipment shall be the product of the same manufacturer.

B. Where no specific material, apparatus or appliance is mentioned, any first-class product made by a reputable manufacturer may be used, providing it conforms to the Contract requirements and meets the approval of the Architect.

C. Materials and equipment shall be the standard products of manufacturers regularly engaged in the production of such material and shall be the manufacturer's current and standard design.

2.03 ALTITUDE:

A. Equipment affected by altitude shall perform satisfactorily the function intended at the altitude of the project site. The altitude of this project is 5000 feet mean sea level.

PART 3 EXECUTION

3.01 GENERAL:

A. Fabrication, erection and installation of the complete Electrical System shall be done in a first class workmanlike manner by qualified personnel experienced in such work and shall proceed in an orderly manner so as not to hold up the progress of the project. The Contractor shall check all areas and surface where Electrical equipment or material is to be installed, removed or relocated and report any unsatisfactory conditions before starting work. Commencement of work signifies this Contractor's acceptance of the prevailing conditions.

B. TEMPORARY POWER AND LIGHTING: Furnish and install all temporary Electrical facilities required for construction and safety operation. No part of the permanent Electrical Systems or the existing Electrical System may be used for temporary service unless approved by the Architect.

C. UTILITIES

1. GENERAL: The Drawings reflect requirements of the serving utilities based on information derived from representatives of the utilities. During the project design phase, the fact that the Architect may undertake to show the utility(s) requirements, does not necessarily indicate that the Architect represents the utilities or their requirements; therefore, within 10 working days after Contract Award and/or Notice to Proceed has been issued, the Contractor shall be responsible for coordinating the requirements of the utilities for the Power System. The Owner shall be responsible for coordinating the requirements for the Telephone and Television Systems.

2. Any deviations from the documents shall be brought to the attention of the Architect no later than 10 working days after Award of Contract and/or Notice to Proceed. Failure to notify the Architect within the 10-day time frame signifies the acceptance of documents and utility requirements by the Contractor and all associated costs therein.

D. EXCAVATION: Comply with Section 02200, Earthwork.

E. PERFORMANCE TESTS

1. Thoroughly test all fixtures, services and all circuits for proper operating conditions and freedom from grounds and short circuits before acceptance is requested. All equipment appliances and devices shall be operated under load conditions.

2. After the interior-wiring system installation is complete and at such time as the Architect may direct, conduct operating tests for approval. When requested, test all the wire, cable, devices and equipment after installation to assure that all material continues to possess all the original characteristics as required by the governing codes and standards as listed in these Specifications.

3. After occupancy of the building has taken place and nominal building power loads have been established, make voltage readings at all panelboards. Based on these readings make final adjustments of taps on all transformers in the building as directed by the Architect. Submit to Architect correspondence and/or drawing delineating readings.

4. Perform such other tests as required by other sections of these Specifications or as requested by the Architect to prove acceptability.

5. Furnish all instruments and labor for testing.

F. OPERATING INSTRUCTIONS AND MANUALS

1. Instructions: Without additional charge to the Owner, the Contractor shall provide an experienced and competent representative to instruct the Owner or his representative fully in the concept, theory, operations, adjustment and maintenance of all equipment furnished for the Electrical System. Contractor shall provide at least two (2) weeks notice to the Architect in advance of this period.

2. Manuals: Upon completion of the work, prepare and deliver to the Owner two (2) sets of complete operating and maintenance manuals for the systems and major equipment installed. Include catalog data, shop drawings, wiring diagrams, performance curves and rating data, spare parts lists and manufacturer's operating and maintenance data. Operating and maintenance manuals as required herein shall be submitted to the Architect for review and distribution to the Owner not less than two (2) weeks prior to the scheduled final acceptance of the Project.

3. Other: The above requirements are in addition to specific instruction and manuals specified for individual systems or equipment.

G. DRAWINGS

A. General: The Electrical Drawings show the general arrangement of all conduit, equipment, etc. and shall be followed as closely as actual building construction and the work of other trades will permit. The Architectural and Structural Drawings shall be considered as a part of the work insofar as these Drawings furnish the Contractor with information relating to the design and construction of the building. Architectural Drawings shall take precedence over Electrical Drawings. The Contractor shall investigate the structural and finish conditions affecting the work and shall arrange his work accordingly, providing such fittings, elbows, pullboxes and accessories as may be required to meet such conditions.

B. Field Measurements: The Contractor shall verify the dimensions governing the Electrical work at the building. No extra compensation shall be claimed or allowed on account of differences between actual dimensions and those indicated on the Drawings.

H. LOCATION OF EQUIPMENT AND OUTLETS

A. The approximate locations of cabinets, panelboards, wiring gutters, switches, light outlets, power outlets, etc., are indicated on the Drawings; however, the exact location shall be determined after thoroughly examining the general building plans and by actual measurements during construction to avoid conflicts with any Structural, Architectural, or other trades, with all locations subject to the approval of the Architect.

B. Verify with the Architect all locations of conduit, boxes, etc., stubbed in the floor prior to installation.

I. IDENTIFICATION AND SIGNS

A. Mark each individual motor controller, disconnect switch, transformer and remote control device to identify each item with its respective service using engraved nameplates.

B. Provide nameplates with engraved lettering not less than 3/8" high where specified or noted. In general, use white core laminated plastic, attached with screws. Embossed plastic adhesive tape is not acceptable. Flush mounted devices may have identification engraved in the device plate.

C. Identify panelboards, transformers and cabinets by engraved nameplates with descriptions indicated on the Drawings together with indication of the location of the feeder overcurrent protection. Install on inside of hinged doors or panelboards and cabinets.

Example: Panel 2P
120/208V, 3-phase, 4-wire
Fed from Panel MDP/cct. #4

D. Provide warning signs on all equipment or devices operating at 300 volts or more, reading "DANGER-480 VOLTS", etc. with white letters on red background of standard code size. Signs shall be decals.

E. All underground utilities indicated on the Drawings shall have a 6" wide plastic marker installed continuously in the trench at 12" below grade. The marker shall have continuous markings embossed in the tape identifying the system installed, i.e., communications, telephone, power, and secured computer.

F. Identify all exposed conduits, junction and pullboxes at maximum intervals of twenty feet and as indicated below. Identify exposed conduits according to the system carried by means of Brady #B-350 permacode thin film pipe markers or approved equal by the Owner. Identify junction and pullboxes by painted on stencils or approved labels. Identification shall be placed at necessary intervals on straight conduit runs, close to all terminations, adjacent to all changes in directions and where conduits pass through walls or floors. Stencils to be painted on with legible contrasting colors without abbreviations. Painting shall be in accordance with DIVISION - FINISHES.

1. Approved Electrical Conduit Color Codes:

120/208 Volt	Black
277/480 Volt	Orange
Fire Alarm	Red
Nurse Call	Blue
Voice Paging	Pink
Television	Purple
Security	White
Telephone	Gray
Monitoring	Maroon/White
Grounding	Green
Emergency. 120/208	Red/Black
Emergency. 277/480	Red/Orange
Computer/Data	Dark Blue/ White
Medical Gas Alarms	Yellow
110 Volt Control	Black/White

G. Identify all receptacle and switch devices with the circuit and overcurrent protection device. Identification may be by waterproof, permanent marker on the rear of the device cover plate or as approved by the Architect and Owner.

3.10 WARRANTY:

A. Deliver originals of all guarantees and warranties on this portion of the work to the Architect. Warrant all equipment, materials and workmanship for one year in accordance with the terms of the Contract.

3.11 PRODUCT HANDLING:

A. Use all means necessary to protect Electrical materials and equipment before, during and after installation and to protect the installed work of other trades.

3.12 RECORD DRAWINGS:

A. As part of this Contract, the Contractor shall provide a complete marked-up set of Contract Documents indicating all changes to the documents during the project construction phase to the Architect. Changes to the Electrical System shall be documented on a set of "Record Drawings" on a daily basis.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16110 - RACEWAYS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 CONDUITS

A. Rigid Steel Conduit: Rigid, threaded, thick-wall with zinc-coated on the inside and either zinc-coated or coated with an approved corrosion-resistant coating on the outside.

B. Rigid Aluminum Conduit: Rigid, threaded, thick-wall type, approved for the application.

C. Intermediate Metal Conduit (IMC): Rigid, threaded, lightweight steel, zinc-coated or coated on the outside and either zinc-coated or coated with an approved corrosion-resistant coating on the inside.

D. Rigid Non-Metallic Conduit: Schedule 40, high impact PVC with 7,000 psi tensile strength at 73.4 degrees fahrenheit, 11,000 psi flexural strength, 8,600 psi compression strength, approved 90 degree conductors. Carlon, Triangle or approved equal.

E. Electrical Metallic Tubing (EMT): Mild steel, zinc-coated on the outside and either zinc-coated or coated with an approved corrosion-resistant coating on the inside.

F. Flexible Conduit: Commercial Greenfield, galvanized steel, with a separate grounding bond wire installed in the conduit in addition to other wires.

G. Liquid-Tight Flexible Conduit: Flexible galvanized steel tubing with extruded liquid-tight PVC outer jacket and a separate grounding conductor installed in the conduit.

H. Conduit Size: Minimum conduit size 1/2" except where specifically approved for equipment connections. Sizes not noted on the Drawings shall be as required by the NEC.

2.02 CONDUIT FITTINGS

A. Rigid Steel Conduit, IMC and EMT Fittings: Iron, steel, or die-cast only.

B. Rigid Aluminum Conduit Fittings: Malleable iron, steel or aluminum alloy. Ferrous fittings zinc-coated or cadmium plated. Aluminum alloy fittings shall conform to the characteristics defined by UL for rigid aluminum metallic conduit and shall not contain more than 0.04 percent copper.

C. Rigid Non-metallic Conduit Fittings: Approved for the purpose and as recommended by the manufacturer.

D. Flexible Conduit Fittings (Commercial Greenfield): Either die-cast, steel, or malleable iron only with insulated throats and shall be of one of the following types:

1. Squeeze or clamp type with bearing surface contoured to wrap around the conduit and clamped by one or more screws.

2. Steel, multiple point type, for threading into internal wall of the conduit convolutions.

3. Wedge and screw type with angular in-edge fitting between the convolutions of the conduit.

E. Liquid-tight Flexible Conduit Fittings: With threaded grounding cone, a steel, nylon, or equal plastic compression ring and a gland for tightening. Either steel or malleable iron only with insulated throats and male thread and locknut or male bushing with or without "O" ring seal.

F. Connectors and Couplings: Compression type threadless fittings for rigid steel conduit or IMC not permitted. Set-screw type fittings for rigid aluminum conduit not permitted. EMT couplings and connectors either die-cast, steel, or malleable iron only, "Concrete-tight" or "Raintight", and either the gland and ring compression type or the stainless steel multiple point locking type. Connectors to have insulated throats. EMT fittings using set-screws or indentations as a means of attachment are not permitted.

G. Bushings: Insulated type, designed to prevent abrasion of the wires without impairing the continuity of the conduit grounding system, for rigid steel conduit, IMC, and rigid aluminum conduit.

H. Expansion Fittings: Each conduit that is buried in or rigidly secured to the building construction on opposite sides of a building expansion joint and each run of 100 feet of exposed conduit shall be provided with an expansion fitting. Expansion fittings shall be hot dipped galvanized malleable iron with factory-installed packing and a grounding ring.

I. Sealing Fittings: Threaded, zinc or cadmium coated, cast or malleable iron type for steel conduits and threaded cast aluminum type for aluminum conduits. Fittings used to prevent passage of water vapor shall be of the continuous drain type.

2.03 WIREWAYS:

A. Square D Company square duct lay in type without knockouts with lengths and fittings hinged to provide an unobstructed wireway to "lay-in" conductors, use standard lengths. Field cuts permitted where absolutely necessary. Rust-inhibiting phosphatizing coating on sheet metal parts. Blue-gray baked enamel finish. Hardware plated to prevent cross fittings, transposition section, gussett brackets, nipples, pull boxes, reducer fittings, wall flanges, panels or cabinet flanges, elbows, ceiling and wall support brackets and supporting hardware, etc.

2.04 FIRE AND SMOKING PROOFING COMPOUNDS:

A. Comply with Section 13900. No substitutions accepted.

PART 3 - EXECUTION

3.01 CONDUIT INSTALLATION

A. Conduit Systems: Rigid steel conduit, IMC, rigid non-metallic conduit or EMT unless otherwise specified.

B. Aluminum Conduit: Aluminum conduit may be used only in dry locations above ground in sizes two inch or larger for Power and Communications Systems.

C. Rigid Non-metallic Conduit: Install in accordance with manufacturer's recommendations. Joints shall be solvent welded. Field bends shall utilize approved bending equipment. Provide rigid steel elbows and rigid steel conduit risers on underground runs or runs in concrete. Provide a suitable bond wire in each run except low voltage communications runs. Underground runs under concrete slabs may be direct buried without concrete encasement if of approved type. Rigid non-metallic conduit may be installed outside the perimeter of the building only when encased in concrete. Concrete total encasement shall be a minimum of four inches around outside of conduit. Rigid non-metallic conduit is not permitted to be surface mounted in ducts, plenums or other air handling spaces. All 90 degree bends shall be rigid steel conduit. For encased conduits carrying 600 volts or more, the concrete shall be colored red using a permanent dye.

D. EMT: Not permitted underground or embedded in concrete.

E. Flexible Conduits: Use flexible conduit only for motor or equipment connections and then only to the extent of minimum lengths required for connections. Length shall not exceed 5 feet without approval from the Architect and Owner. Install flexible conduit connections at all resilient-mounted equipment. Provide liquid-tight flexible conduit in exterior, wet or damp locations and for connections to wet pipe mechanical systems.

F. Conduit in Concrete: Rigid steel conduit or rigid non-metallic conduit may not be embedded in concrete that is in direct contact with the earth. When embedded, the outside diameter shall not exceed one-third the thickness of the concrete slab, wall or beam, shall be located entirely within the center third of the member, and the lateral spacing of conduits shall not be less than three diameter unless otherwise prohibited by Architect.

G. Steel Conduit in Ground: Rigid steel conduit that is not completely encased in concrete but is in contact with ground or on a vapor barrier shall be wrapped with Scotchwrap 51 half-lapped, or shall have an additional outside factory coating of polyvinyl chloride with a minimum coat thickness of 20 mils. Other PVC or Phenolic-resin epoxy coating material which is equally flexible and chemically resistant may be used providing approval by the Architect is obtained prior to the installation.

H. Exposed Conduits: Install exposed conduit systems parallel to or at right angles to the lines of the building. Right angle bends in exposed runs shall be made with standard elbows, screw jointed conduit fittings or conduit bent to radii not less than those of standard elbows.

I. Concealed Conduits: Install conduit systems concealed unless otherwise noted. Conduit systems may be exposed in unfinished utility areas, ceiling cavities, and where specifically approved by the Architect. Install concealed conduit systems in as direct lines as possible.

J. Conduit Openings: Protect all vertical runs of conduits or EMT terminating in the bottoms of boxes or cabinets, etc., from the entrance of foreign material prior to installation of conductors.

K. Sealing Fittings: Install where required by the NEC, where conduits pass from warm to cold locations and where otherwise indicated.

L. Sleeves for Conduit: Install sleeves for conduit where shown or as required. Conduit sleeves not used shall be plugged with recessed type plugs. Sleeve all conduit passing through walls. Sleeves that are used shall be sealed tight with rated fire and smokeproofing compounds as specified in Section 13900.

3.02 CONDUIT SUPPORTS

A. Supports: Provide supports for horizontal steel conduits and EMT not more than eight feet apart with one support near each elbow or bend and one support within one foot of each coupling, including runs above suspended ceilings.

B. Straps: Install one-hole pipe straps on conduits 1-1/2" or smaller. Install individual pipe hangers for conduits larger than 1-1/2". Spring steel fasteners with hanger rods may be used in dry locations in lieu of pipe straps.

C. Trapezes: Install multiple (trapeze) pipe hangers, Uni-Strut or approved equal, where two or more horizontal conduits or EMT run parallel and at the same elevation. Secure each conduit or EMT to the horizontal hanger member by specifically designed and approved fasteners for the system used.

D. Hanger Rods: Install 1/4" diameter or larger steel rods for trapezes, spring steel fasteners, clips and clamps. Wire or perforated strapping shall not be used for the support of any conduit or EMT.

E. Fastening: Fasten pipe straps and hanger rods to concrete by means of inserts or expansion bolts, to brickwork by means of expansion bolts, and to hollow masonry by means of toggle bolts. Wooden plugs and shields shall not be used. Power-driven fasteners may be used to attach pipe straps and hanger rods to concrete where approved by the Architect. All conduits not embedded in concrete shall be firmly secured by means of pipe clamps, hangers, etc., equal to Caddy Fasteners of ERICO Products, Inc., or approved equal. Wire wrapped around conduits and supporting members will not be accepted. Conduit fastened to the wall above the ceiling is not acceptable.

3.03 IDENTIFICATION: Identify per Section 16010, Paragraph 3.09F.

3.04 CLOSING OF OPENINGS:

A. Wherever slots, sleeves or other openings are provided in floors or walls for the passage of conduits or other forms of raceway, including bus ducts, such openings, if unused, or the spaces left in such openings, shall be closed in a manner approved by the Architect and per Section 13900. All closure material along with installation methods shall retain the fire rating integrity of the surface being penetrated. All openings in walls or floors remaining after removal of existing conduits, raceways, or bus ducts shall be closed in a like, approved manner.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16120 – WIRES AND CABLES

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General.

B. Conditions (if any) and General Requirements apply to the work specified in this section.

C. General Provisions: Section 16010.

D. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 WIRES AND CABLES (600 VOLTS)

A. Type:

1. Conform to the applicable UL and IPCEA Standards for the use intended. Copper conductors with 600 volt insulation unless otherwise specified or noted on the Drawings. Stranded conductors for No. 6 and larger and where elsewhere specified or noted on the Drawings.

2. All conductors shall be copper. Aluminum conductors will be permitted only on 600 volt and above systems.

B. Insulations: Type THWN insulation unless otherwise specified or noted on the Drawings. Type THWN minimum or type XHHW filled cross-linked polyethylene 90 degree C. thermosetting insulation for conductors larger than No. 6 and elsewhere as required by NEC. 90 degrees C. minimum insulation within fixture wireways of fluorescent fixtures.

C. Size: No. 12 minimum unless otherwise specified or noted on the Drawings. Not less than NEC requirements for the system to be installed.

D. Color Coding: Phase, neutral and ground conductors color-coded in accordance with NEC. Connect all conductors of the same color to the same phase conductors.

	Phase A	Phase B	Phase C	Neutral
120/240V/1 Phase	Black	Red	-----	White
208Y/120V/3 Phase	Black	Red	Blue	White
277/480V/3 Phase	Brown	Orange	Yellow Gray	

Ground shall be Green for all systems.

E. Conductors No. 12 and 10 shall be solid color compounded for the entire length and each like color shall be connected only to the particular phase throughout the project. Conductor sizes larger than No. 10 may be color-coded at each termination and in each box or enclosure with six inches of half-lapped 3/4" pressure sensitive, plastic tape of respective colors in lieu of solid color compound.

2.02 CONTROL CONDUCTORS:

A. Copper, minimum size No. 14 with 19/35 stranding, color-coded filled cross linked polyethylene 90 degree C. 600 volt insulation and neoprene or equal outer jacket, equal to General Electric SI-58109 or SI-58742. Multi-conductor control cables shall be provided where more than three control conductors are installed in the same conduit between common terminations. Provide two spare conductors minimum in each control cable.

2.03 COMMUNICATION AND ELECTRONIC CABLE:

A. As required or specified in the section of these Specifications specifying the equipment. Splices shall be crimped or soldered or shall use an approved connector.

2.04 VERTICAL CABLE SUPPORTS:

A. Split wedge type supports which clamp each individual conductor and tightens due to weight of the cable shall be used without metallic sheath.

2.05 CONNECTORS AND LUGS

A. For copper conductors No. 6 and smaller: 3M Scotch-Lok or T & B Sta-Kin, or equal compression or indent type connectors with integral or separate insulating caps.

B. For copper conductors larger than No. 6: Solderless, indent, hex screw, or bolt-type pressure connectors, properly taped or insulated.

2.06 TAPE:

A. Plastic tape, 8.5 mils minimum thickness, 1,000,000 megohms minimum insulation resistance, oil resistant vinyl backing, oil resistant acrylic adhesive, incapable of supporting combustion per ASTM D-1000. Equal to 3-M Super 88 Tape.

2.07 FEEDER CIRCUITS:

A. Single conductor feeder cables shall be of the size and type as indicated on the Drawings. Sizes shown are for copper conductors unless otherwise noted on Drawings.

2.08 BRANCH CIRCUITS

A. Branch circuits shall be No. 12 AWG copper minimum and shall be larger AWG size where indicated on Drawings. Where branch circuits exceed 100 ft. in length, the AWG size shall be increased to accommodate voltage drop.

B. Branch circuits to all equipment, fixtures and outlets shall include a white neutral and green wire equipment ground.

PART 3 - EXECUTION

3.01 WIRE AND CABLE TESTS (600 VOLTS):

A. Measure the insulating resistance of service entrance conductors, feeder circuit conductors and service ground. Measurements shall be taken between conductors and between conductors and ground. Resistance shall be 1,000,000 ohms or more when tested at 500 volts by megger

without branch circuit loads. Tests and procedures shall meet the approval of the Architect, and shall be in accordance with the applicable IPCEA standards for the wires and cables to be installed. Furnish all instruments, equipment and personnel required for testing, and conduct tests in the presence of the Architect. Submit written reports of the tests and results when requested by the Architect.

3.02 SPLICES (480 VOLTS AND UNDER):

A. Permitted only at outlets or accessible enclosures. Conductor lengths shall be continuous from termination to termination without splices unless approved by the Architect.

3.03 PULL WIRES:

A. In each empty conduit, except underground conduits, install a plastic line having tensile strength of not less than 200 pounds. In each empty underground conduit, install a No. 10 AWG bare, hard-drawn copper pull wire or a plastic line having a tensile strength of not less than 200 pounds.

3.04 RACEWAYS:

A. Install in rigid conduit, EMT, or flexible metallic conduit, unless otherwise specified or noted on the Drawings.

3.05 CABLE BENDS:

A. Radius or bends not less than ten times the outer diameter of the cable.

3.06 CONDUCTOR PULL:

A. Conductors shall not be pulled into conduits until after all plastering or concrete work is completed
and all conduits in which moisture collected have been swabbed out.

3.07 FEEDER IDENTIFICATION:

A. Tag feeder circuits in each enclosure with wrap-around circuit designation labels.

3.08 CONNECTORS AND LUGS:

A. Install with manufacturer's recommended tools and with the type and quantity of deformations recommended by manufacturer.

3.09 BUNDLING:

A. Conductors No. 10 and smaller shall be neatly and securely bundled and conductors larger than No. 10 shall be neatly and securely cabled in individual circuits, utilizing marlin twine, two-ply lacing or nylon straps.

3.10 15 KV CABLE INSTALLATION:

A. Install and terminate 15 KV cables in accordance with the manufacturer's approved recommendations. The conductors shall be free of kinks and twists, and all bends shall be formed with smooth radius not smaller than ten times the diameter of the cable nor smaller than the minimum radius recommended by the manufacturer, whichever is greater. Install cables in

continuous lengths without splice unless specifically indicated on the Drawings. Install cable terminations in accordance with the manufacturer's written recommendations. All cables in one conduit shall be pulled in together, using a suitable patented grip on the conductors and a basket weave grip over the insulation, arranged so the stress of pulling is applied to the conductor and not the insulation. Lubricate cables with Cablelube or Minerallac cable pulling compound of the type approved by the cable manufacturer and Architect. Simplex kits are not acceptable. Mark cables for phase identification at each termination by means of Brady "All Temperature" markers or other approved means. Left position Phase "A" black; center position Phase "B" red; right position Phase "C" blue.

3.11 WIRING FOR LOW-VOLTAGE SPECIAL SYSTEMS

A. General: For the purpose of this Specification, the word "cable" refers to both protected and unprotected cable installations. Special Systems refers to telephone, television, overhead paging, nurse call, building automation, security, data, and fire alarm systems.

B. Products: Approved cabling shall be used per Section 16120, 2.03.

C. Protection Requirements: All special systems cable runs inside walls and floors shall be in rigid conduit or BX cable per Section 16110. Cables placed in existing walls may be run in flex if approved by the Architect in advance. Runs exterior to walls and floors shall be as shown in the table below:

System	Requirement	Reference Section
Telephone	Approved cable without additional protection	16740, 16117
Television	Approved cable without additional protection	none
Overhead Paging	Approved cable without additional protection	16770
Nurse Call	Approved cable without additional protection	16761
Building Automation	Approved cable without additional protection	Division 17
Fire Alarm	Approved cable in rigid conduit	16721
Security	Approved BX cable or cable in rigid conduit	16727

D. Routing: All cable runs shall be routed to avoid passing near sources of electrical noise such as florescent fixtures, power converters, etc. Cable runs shall be routed to avoid paralleling high voltage or high amperage electrical wiring. Cable runs paralleling telephone cables shall have a minimum of twelve inch separation. The Architect will authorize waivers (in writing) for specific cases where the twelve inch separation cannot be maintained.

E. Horizontal Installation: Horizontal cable runs shall be installed per Section 16110, 3.01 using appropriate stringers, J-hooks, cable trays, and any other devices necessary so no cables above the ceiling shall lay on the ceiling, electrical conduit, ceiling suspension system, piping, ductwork or on any other systems installed in the area. The cable shall not be supported by any of the above mentioned systems. All cable shall be installed in a neat and orderly manner, above or well clear of existing systems. Cable shall not be installed below existing systems or attached to existing systems except on specific written wavier by the Architect.

F. Vertical Installation: All vertical cable runs shall be installed with appropriate strain reliefs.

G. Cable Identification: Identify all cable per Section 16010, 3.09 F. Wiring color code shall be approved in advance by the Architect and maintained throughout the scope of the work.

H. Record Drawings: Per Section 16010, 3.12, the Contractor shall keep accurate records of the cable installation and at the end of the Contract shall turn over to the Architect documentation showing the routing and labeling of all cabling. The format of this documentation shall be approved by the Architect prior to beginning work.

I. Hazardous Materials: The Contractor shall not disturb any spray-on fire-proofing insulation on roof panels or supporting beams without the approval of the Architect and Owner. Some of this material contains asbestos and proper abatement procedures must be followed. Damage occurring to existing asbestos during the course of the work shall be repaired at the expense of the Contractor.

J. Wall and Floor Penetrations: All penetrations of smoke and fire walls and floors shall be the responsibility of the Contractor. Conduits and cables penetrating these walls and floors shall be sleeved according Section to 16110, 3.01L, and sealed per Section 16110, 3.04, both inside and out, with approved fire rated materials to prevent the passage of smoke. Fire and smoke penetrations caused by the removal of existing cable shall be properly sealed. The Contractor shall not penetrate any fire wall or structural member without specific authorization by the Architect.

K. Existing Finishes: The Contractor shall be responsible to repair any damage to the finishes (paint, wallcoverings, tile, carpet, ceiling tile, etc.) caused by the Contractor or his Subs in the areas where he is working.

L. Ceiling Tile: All ceiling tile removed by the Contractor for ceiling access shall be replaced at the end of each working day. Exceptions to this requirement must be approved by the Architect and Owner.

M. Equipment Installation: The Contractor shall not install equipment in any equipment room, closet, or in ceiling spaces without authorization from the Architect and Owner. All equipment shall be installed in NEMA enclosures. All wiring entering these enclosures shall be properly secured and protected.

N. Underground Installations: When installing or removing underground conduit installations, comply with Section 02200: Earthwork.

O. Cable Tests: All cables shall be tested by the Contractor to insure there are no grounds, opens or shorts. The tests shall be done as appropriate to the type cable being installed and as agreed between the Owner and Contractor. Any deficiency pertaining to these requirements shall be corrected by the Contractor prior to final functional and operational tests of the system with no charge to the Owner.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16130 – OUTLET BOXES

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 OUTLET BOXES

A. Construction: Zinc-coated or cadmium plated sheet steel boxes of a class to satisfy the conditions at each outlet except where unilet or condulet bodies are required. Knockout type with knockouts removed are required. Knockout type with knockouts removed only where necessary to accommodate the conduit entering. Square cornered, straight sided gang boxes, 4" octagon concrete rings and 4" octagon hung ceiling boxes with bars may be folded type; one-piece deep-drawn for all other boxes.

B. Size: To accommodate the required number and sizes of conduits, wires and splices in accordance with NEC requirements, but not smaller than size shown or specified. Standard concrete type boxes not to exceed six inches deep except where necessary to permit entrance of conduits into sides of boxes without interference with reinforcing bars. Special purpose boxes shall be sized for the device or application indicated.

C. Fixture Studs: 3/8" malleable iron fixture stud in outlet boxes for ceiling lighting fixtures and interior bracket lighting fixtures, other than lamp receptacles and drop cords.

D. Exposed: Screw-joint type with gasketed weatherproof covers in locations exposed to the weather.

E. Tile Boxes: Rectangular in shape with square corners and straight sides for receptacles and switches mounted in furniture cabinets or in glazed tile, concrete block, marble, brick, stone or wood walls. Install without plaster rings.

F. Wall-Mounted Switch, Receptacle and Signal Boxes: Unless otherwise noted or specified not less 4" square by 1-1/2" deep for 2 devices and multi-gang boxes for more than 2 devices. Boxes for switches and receptacles on unfinished walls may be screw-joint type with covers to fit the devices.

G. Wall-mounted Telephone Outlet Boxes: 4" square by 2-1/8" deep unless otherwise noted in the Drawings.

H. Light Fixture Boxes: 4" diameter by 1-1/2" deep minimum for ceiling and interior bracket fixtures with concealed conduits. Plaster covers for bracket fixtures to have 3" diameter openings. Screw-joint boxes with canopy seat for ceiling and interior bracket fixtures with exposed conduits.

I. Grounding Terminal: Provide a grounding terminal in each box containing a green equipment ground conductor, or serving motors, lighting fixtures or receptacles. Grounding terminal shall be green colored washer-in-head machine screw or grounding bushing.

2.02 PULLBOXES:

A. Minimum NEC requirements unless larger box is noted. As specified for outlet boxes with blank cover for pullboxes with internal volume not more than 150 cubic inches. As specified for cabinets or pullboxes with internal volume over 150 cubic inches, except covers to have same thickness as box with corrosion-resistant screw or bolt attachment.

PART 3 - EXECUTION

3.01 OUTLET BOXES

A. Installation: Unless otherwise specified or shown on the Drawings, outlet boxes shall be flush mounted and the front edges of the boxes or plaster covers shall be flush with the finished wall or ceiling line or if installed in walls and ceiling of incombustible construction, not more than 1/4" back of same. Mount boxes with the long axes of devices vertical, unless otherwise specified. Boxes in plastered walls and ceilings shall be provided with plaster covers. Box extensions and/or covers will not be permitted. Install in a rigid and satisfactory manner with suitable metal bar hanger, box cleats, adjustable box hangers, etc. Use wood screws on wood, expansion shields on masonry and machine screws on steel work. Boxes shall be secured to metal studs with sheet metal screws. Metal stud clips, such as Caddy “MSF”, are not acceptable. All boxes shall have far side box supports installed similar to Caddy #766.

B. Mounting Heights: The mounting height of a wall-mounted outlet box shall be construed to mean the height from the finished floor to the horizontal centerline of the cover plate. On exposed tile, block or brick construction, mount outlet boxes at the nearest bed joint to the mounting height indicated. The height of all outlets shall be at the same height when there is a secondary type wall construction along with the masonry construction. The height in the masonry construction shall be the governing factor. Verify exact height of all boxes with Architect.

C. Wall mounted switch, receptacle and signal outlets: On columns, pilasters, etc., mount so the centers of the columns are clear for future installation of partitions. Install outlet boxes near doors or windows close to the trim. Install outlet boxes near the doors or the lock sides as shown on Architectural Drawings unless other locations are approved by the Architect.

3.02 PULLBOXES:

A. Provide additional pullboxes wherever necessary to meet requirements for maximum lengths of conduit runs and maximum numbers of bends as specified under "Conduit and Fittings".

3.03 FIXTURE CONNECTIONS:

A. Recessed or surface light fixtures in lay-in or accessible ceilings shall be connected with minimum 1/2" flexible metallic conduits, 4 to 6 feet long with grounding provisions.

3.04 IDENTIFICATION:

A. Identify all exposed junction and pullboxes according to the system carried by means of painted-on stencils or labels with legible letters and contrasting colors without abbreviations. In general, use yellow color. Painting shall be in accordance with DIVISION - FINISHES.

END OF SECTION

SECTION 16133 - CABINETS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Sheet steel except those exposed to wet or rain conditions that shall be raintight unless otherwise noted. Cabinets without through feeder wiring shall be arranged to provide a wiring gutter not less than 4" wide for branch circuit panelboards served by feeders up to 4/0. Panelboards served by feeders in excess of 4/0, up to and including 750 MCM, shall be provided with top, bottom and side gutters 8" wide. Panelboard cabinets in all cases shall meet or exceed the minimum requirements of Article 373-6 of the National Electrical Code. Cabinets shall be of standard make and shall be equal in all respects to those bearing the Underwriters Laboratories label. Cabinets, including boxes shall be made of galvanized steel. All outside surfaces of trim and doors shall be given a factory finish coat of No. 61 ANSI gray paint, or approved manufacturer's standard. Cabinet for telephone and communications systems shall have 5/8" exterior grade, one-face B-grade or equal plywood backboard inside with maximum height and width.

2.02 FEED THROUGH GUTTERS:

A. Where feeders go through panelboard cabinets to serve panelboards above or beyond, the wiring gutters in panelboard cabinets shall be a minimum of 8" on sides, top and bottom.

2.03 FRONTS:

A. One piece sheet steel frame and a hinged door with catch and lock for flush cabinets. Telephone and signal cabinets for surface mounting shall be equipped with a door hinged directly to cabinet. One piece sheet steel with 3/4" flange with all edges shaped to cover edge of box. Fronts may be secured to box by means of flathead screws with captive nuts or clamps.

2.04 DOORS:

A. Doors shall close against a rabbet placed all around the inside edge of the frame with a close fitting joint between door and frame. The doors shall be fitted with substantial flush hinges placed not over 24" apart, nor more than 6" from ends of doors, and fastened permanently to the door and frame with flat-headed rivets or spot welds, or with concealed flush piano hinges. Fastening screws of fronts shall be set not over 24" apart. Doors over 48" in height shall be equipped with a vault hinge and a three point catch.

2.05 DOOR-IN-DOOR:

A. Both surface and flush cabinets shall be door-in-door. The door over the interior of the cabinet shall be provided with hinges and combined lock and latch. The outside door over the cabinet gutters shall have a hinge on one side, and machine screws into threaded holes in the cabinet on the other three sides. In order to insure the rigidity of the outside door, surface type cabinets shall have a 1/2" deep lip bent over all around, with the corners welded and grounded; or in the case of flush cabinets, a steel angle frame, equivalent in strength to the bent over lip, shall be welded to the inside of the door. The outside door shall be of such size as to allow a minimum of 2-3/4" opening to all four sides of the wiring gutter. All locks shall be keyed alike.

2.06 LOCKS:

A. Furnish each cabinet with a combination catch and flat key lock. The telephone, electrical and signal cabinet locks shall be fitted to separate keying for each system. Furnish two keys for each cabinet.

2.07 GROUND BAR:

A. Each cabinet for a panelboard shall be provided with a copper interior ground bar suitably braced or bolted to the cabinet wall. The equipment ground bar shall be equivalent in current carrying pressure connector terminations for the associated feeders, branch circuits, etc.

PART 3 EXECUTION

3.01 CABINETS:

A. Cables installed in the wiring gutters of cabinets shall be neatly bundled, routed and supported. Minimum bending radii as recommended by the cable manufacturer shall not be reduced. Lighting and power cabinets shall be installed with tops 6'-6" above floor and bottoms not less than 12" above floor. The height above floor of the highest over current device handle shall not exceed 6'-6".

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16140 – WIRING DEVICES

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 SNAP SWITCHES:

A. Unless otherwise specified each snap switch (flush tumbler-toggle) shall be of the AC general use type for mounting in a single-gang spacing, fully rated 20 amperes, 120-277 volts, conforming to minimum requirements of the latest revision of the Underwriters Laboratories, Inc., UL 20, Fifth Edition, Standard Snap Switches and further requirements herein specified. Specification grade, heavy duty, single pole, three way or four way, of the maintained momentary or lock type as indicated on the Drawings. Ivory color handles unless otherwise indicated on the drawings. Silver or silver alloy contacts, AC 120/277 volt general use snap switches shall be capable of withstanding tests as outlined in NEMA Publication WDI-1956, and shall be as follows unless otherwise noted:

20A120-277V AC	Hubbell	Bryant	P & S
1P	1221-I-IV	4901-I-IV	20-AC-1-I-IV
2P	1222-I-IV	4902-I-IV	20-AC-2-I-IV
3 way	1223-I-IV	4903-I-IV	20-AC-2-I-IV
4 way	1224-I-IV	4904-I-IV	20-AC-3-I-IV

2.02 RECEPTACLE

A. General: Configuration and requirements for all connector or outlet receptacles shall be in accordance with NEMA Publication WDI-1965, Part 3 and Part 10. Single or duplex as shown or noted on Drawings. Ivory color unless otherwise noted on the drawings. Double grip contacts for each prong.

B. Grounding Type: All receptacles shall be grounding type with a green colored hexagonal equipment ground screw of adequate size to accommodate an insulated grounding jumper (based on Table 250-95 of the NEC with minimum size No. 14 AWG). Grounding terminals of all receptacles shall be internally connected to the receptacle mounting yoke.

C. Unless otherwise noted, receptacles shall be as follows:

Type	Hubbell	Bryant	P&S
Hospital Grade Duplex – 20 amp	8300-I	8300-I	9200-HGI
Spec. Grade Duplex - 15 amp	5262-I	5262-I	5262-I
Spec. Grade Duplex - 20 amp	5362-I	5362-I	5362-I

GFCI, Hospital Grade Duplex - 15 amp	GF-8200-I	GFR82FT-I	1591-FHGI
GFCI, Hospital Grade Duplex - 20 amp	GF-8300-I	GFR83FT-I	2091-FHGI
GFCI, Spec. Grade Duplex - 15 amp	GF-5262-I	GFR52-FT-I	1591-RI
GFCI, Spec. Grade Duplex - 20 amp	GF-5362-I	GFR53FT-I	2091-FI
Isolated Gnd., Orange, Spec. Grade Duplex - 15 amp	IG-5261	5261-IG	IG5266-SS
Isolated Gnd., Orange, Spec. Grade Duplex - 20 amp	IG-5361	5361-IG	IG5366-SS
Isolated Gnd., Orange, Hospital Grade Duplex - 15 amp	IG-8210	8210-IG	IG9201-HG
Isolated Gnd., Orange, Hospital Grade Duplex - 20 amp	IG-8310	8310-IG	IG9301-HG
Safety Receptacle, Duplex	SG-62HI	SG-62	SG-62

D. Special: Receptacles for special applications shall be as indicated on the Drawings.

2.03 PLUG CAPS:

A. Except for duplex receptacles and cleaning combination receptacles one matching plug cap shall be provided for each receptacle. No plug caps are required for duplex receptacles.

2.04 DEVICE PLATES

A. General: Provide device plates for each switch, receptacle, signal and telephone outlet and special purpose outlet. Do not use sectional gang plates. Provide multi-gang outlet plates for multi-gang boxes. Plates shall be Stainless Steel unless otherwise noted.

1. Exposed: Plates for exposed joint fittings shall match the fittings with edges of plates flush with edges of fittings. Heavy cadmium steel plates with gasket. Plates for cast type boxes at locations subject to wet or rain conditions shall be of cast, vapor tight type. Provide hinged lift covers for devices.

2. Communication: Plates for telephone and signal outlets shall each have a 3/8" bushed opening in the center. Wall plates for push-button and buzzer outlets shall have openings to suit the push buttons and buzzers.

3. Plates for special purpose outlets shall be of a design suitable for the particular applications.

2.05 CLOCK OUTLETS:

A. Flush, single receptacle, regressed in Stainless Steel device plate.

PART 3 - EXECUTION

3.01 DEVICE PLATES:

A. Install with alignment tolerance of 1/16" and all edges in continuous contact with wall surfaces.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16150 - MOTORS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Motors will be furnished with the equipment they are intended to operate and therefore generally will be furnished under other sections of these specifications. Furnish nameplates indicating manufacturer, horsepower, phase, cycle, voltage, RPM, type of motor windings, NEMA design and type of enclosure.

2.02 SIZE:

A. Adequate for the duty to be performed without exceeding their full rated load or safe operating temperature when the driven equipment is operating at specified capacities with ambient temperatures and altitude compensation simulating actual job conditions.

2.03 TYPE:

A. Suitable for the application but not less than Class A insulation and continuous duty classification, based on 40 degrees C. ambient temperature with drip proof frames and totally enclosed for exterior use. Conform to design, construction and performance requirements of NEMA and the Rotating Electrical Machinery Standards of ANSI.

2.04 VOLTAGE RATING:

A. NEMA Standard to correspond to circuit voltage serving the motor. Motors operating on 208 volt systems shall be rated 200 volts or shall be specifically wound for the voltage. Rated and covered by the plus or minus 10% rated voltage warranty for 208 volts.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. In accordance with related work specified in other sections of these Specifications and standard industry practice.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16155 – MOTOR STARTERS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

1.02 SUBMITTALS:

A. Submit complete shop drawings, control diagrams and descriptive literature.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Starters shall be as specified in this section unless modified by other sections of these Specifications or by details or control diagrams on the Drawings. Provide NEMA Type I general purpose enclosures, unless otherwise noted or required, with doors arranged for padlocking. Equipment starters with contactors to break each ungrounded line to the motor. Starters shall be as manufactured by General Electric, ITE, Square D, or Cutler-Hammer.

2.02 RATING:

A. Each starter shall have a horsepower rating not less than the rating of the motor it controls. Starters and all their related component parts shall be designed and properly coordinated for the rating and characteristics of the motors furnished under the various sections of the specifications. Motor starters and overcurrent devices shall be ambient temperature compensated.

2.03 OVERLOADS:

A. Provide ambient temperature compensated thermal overcurrent devices in each ungrounded phase. Provide a suitable reset device for resetting over current trip on the starter front. Overcurrent device ratings shall not exceed code maximums and shall be as recommended by the motor manufacturer for the application.

2.04 CONTROLS

A. Control circuit conductors shall be grounded in accordance with the NEC and shall be arranged so that an accidental ground will not start the motor.

B. Energy for control circuits and indicating lights shall be 120 volts.

C. Provide manual start-stop pushbuttons mounted in starter case unless automatic devices are shown elsewhere on Drawings or specified.

D. Automatic control devices such as thermostats, float or pressure switches may control the starting and stopping of motors directly, provided the devices used are designed for the purpose and have an adequate horsepower rating. When the automatic control device does not

have such a rating, a magnetic starter shall be used, with the automatic control device actuating the pilot control circuit.

E. Starters controlled by automatic devices shall be provided with hand-off-automatic selector switch mounted on starter case and connected so motor can be manually operated regardless of the position of the automatic control device. Selector switch shall not be connected to supersede any safety device or safety interlock.

F. Provide starters with a sufficient number of auxiliary contact (N.O. and/or N.C.) to afford the control and interlocking required. Provide additional relays if required to obtain the correct control.

PART 3 - EXECUTION

3.01 GENERAL:

A. Provide each motor with a motor starter of proper design to meet the requirements of the motor and drive.

3.02 INSTALLATION:

A. Install and connect in accordance with related work specified in other sections of these Specifications and standard industry practice.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16160 - PANELBOARDS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Cabinets: Section 16133.

D. Motor and Circuit Disconnects: Section 16170.

E. Fuses: Section 16181.

F. Grounding: Section 16450.

1.02 SUBMITTALS:

A. Submit complete shop drawings with outline dimensions, descriptive literature and complete description of the frame size, trip setting, class and interrupting rating of all overcurrent devices. Identify available space.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Dead front, safety type with voltage ratings as scheduled. Panelboards shall be of the type required for the short circuit and duty ratings indicated on the drawings. Panelboards shall be as manufactured by General Electric, ITE, Square D, or Cutler-Hammer and shall be circuit breaker or fusible type as scheduled.

2.02 CABINETS:

A. Each panelboard shall be enclosed in a single sheet metal cabinet with front doors, catches, locks, etc., as specified in Section 16133, Cabinets.

2.03 DOOR IN DOOR:

A. Both surface and flush panels shall be door in door. The door over the interior of the panel shall be provided with hinge and combined lock and latch. The outside door over the panel gutters shall have a hinge on one side and machine screws into threaded holes in the panelboard cabinet on the other three sides. In order to insure the rigidity of the outside door, surface type panels shall have a 1/2" deep lip bent over all around with the corners welded and ground; or, in the case of flush panels a steel angle frame, equivalent in strength to the bent over lip shall be welded to the inside of the door. The outside door shall be of such size as to allow a minimum of 2 3/4" opening to all four sides of the wiring gutter or as required by NEC All locks shall be keyed alike.

2.04 BREAKERS:

A. Molded case or combination molded case and current limited fuses as scheduled or required. Provide quick make and quick break toggle mechanism, inverse time trip characteristics and trip free operation on overload or short circuit. Automatic tripping shall be indicated by a handle

position between the manual OFF and ON position. Provide a trip element for each pole, a common trip bar for all poles and a single molded insulating material handle. Handle ties will not be accepted. Adjustable magnetic trip devices shall be set at the factory to the low trip setting. Provide breaker frame sizes as required for the continuous rating or the interrupting capacity, whichever is larger.

2.05 BOLTED TYPE:

A. Circuit breaker current-carrying connections to the bus shall be of the bolted type, factory assembled. Stab in type not permitted. Provide bus bars for three phase panelboards of the sequence phased type connection and arranged for three phase, four wire mains, unless otherwise indicated on the Drawings.

2.06 FUSIBLE SWITCH UNITS:

A. Quick make, quick break type with external operation handle suitable for padlocking in OFF position. Provide interlock to prevent opening cover when switch is in ON position unless interlock release is operated. Provide switch frame sizes as required for the continuous rating or the interrupting capacity, whichever is larger. Fusible panelboards shall be UL rated and listed for service entrance where applicable.

2.07 SPACE ONLY:

A. Where "Space Only" is noted on the drawings, provide necessary connectors, mounting brackets, etc., for the future insertion of an overcurrent device.

2.08 DIRECTORIES:

A. Provide circuit directories on the inside face of the door of each panel.

2.09 LABELS:

A. Labels for identifying the breakers shall be engraved laminated plastic strips attached by screws or phenolic buttons or small window frame type. Adhesive stick on labels alone will not be acceptable unless specifically approved.

2.10 SKIRTS:

A. Where noted on the Drawings panelboards shall be skirted with complete metal enclosures and barriers separating the panel interior.

PART 3 - EXECUTION

3.01 DIRECTORIES:

A. Provide typewritten circuit descriptions referencing permanent room numbering assigned in lieu of the room numbering shown on the Drawings inserted in plastic holder. Text shall be able to be read entirely without moving the card.

3.02 CIRCUIT NUMBERING:

A. Circuit numbering shown on the Drawings is based on pole position in the panelboard and not consecutive numbering.

3.03 PHASE ROTATION:

A. Phase A, left bus; phase B, center bus; phase C, right bus (front viewing).

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16170 – MOTOR AND CIRCUIT DISCONNECTS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 DISCONNECTING MEANS

A. Safety Switches: Fusible or non-fusible Type HD quick break safety switches of the sizes and capacities indicated or required. Raintight enclosures at locations exposed to the weather.

B. Separately Enclosed Motor Snap Switches: Motor snap switches may be used for motor disconnect means, controller and motor overcurrent protection when applicable. These devices shall be horsepower rated and may contain motor running overcurrent protection.

C. Safety Type Disconnecting Switches: Heavy duty, quick make, quick break type, 250 or 600 volt rating as required for the application. Number of poles and ampacity as noted or required by code. Fusible where noted with fuse clips suitable for Buss Fusetron Class R Fuses. Short circuit rating of 200,000 RMS Amperes with CV Class R rejection feature installed in fuseholders. NEMA 1 enclosures for dry locations. NEMA 3 R enclosures for wet locations or at exposed weather locations unless otherwise noted.

2.02 MANUFACTURERS

A. General Electric, ITE, Square D, or Cutler-Hammer.

PART 3 - EXECUTION

3.01 DISCONNECT MEANS:

A. Install in each location indicated on the Drawings and elsewhere as required by NEC.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16181 - FUSES

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Motor and Circuit Disconnect: Section 16170.

D. Grounding: Section 16450.

PART 2 - PRODUCTS

2.01 FUSES

A. General: Dual element, time delay type, based on heavy service, Buss Fusetron, or equal, unless otherwise noted or required for installation.

B. Current Limiting Fuses: Provide where indicated on the Drawings. For individual motor circuit protection, provide fuse sized approximately 125 percent of full load current with 100,000 amperes interrupting capacity. For non-motor feeder protection in conjunction with fused switches, install NEMA Class L fuses sized 125 percent of load current or as required for coordination with air and molded case circuit breakers, shall be furnished by the circuit breaker manufacturer.

C. Above 600 amps; Class L, "Hi-Cap" as manufactured by Bussman or approved equivalent by Chase-Shawmut or Federal Pacific.

D. Below 600 amps, as required by short circuit duty, Class K-1, "Limitron" or class K-5, "Low Peak" or Class K-5, "Fusetron" as manufactured by Bussman or approved equivalent by Chase-Shawmut or Federal Pacific.

E. All switches having current limiting fuses installed shall have a Lamicoid nameplate with white lettering on red background reading:

WARNING, REPLACE ONLY WITH CURRENT
LIMITING FUSES AS ORIGINALLY INSTALLED

2.02 COORDINATION:

A. Coordinate the low voltage fuses required for the project to provide basic selective protection and properly coordinate with the other associated protective equipment.

PART 3 - EXECUTION

3.01 COORDINATION:

A. Coordinate the low voltage fuses required for the project to provide basic selection protection and properly coordinate with the other associated protective equipment.

3.02 SPARE FUSES:

A. Furnish one complete spare set of each size of fuses. Deliver to the Owner in the original boxes. It shall consist of 100% fuse replacement for all fuses required for panelboards and safety switches.

END OF SECTION

SECTION 16450 - GROUNDING

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Raceways: Section 16110.

D. Outlet Boxes: Section 16130.

E. Wires and Cables: Section 16120.

F. Wiring Devices: Section 16140.

G. Cabinets: Section 16133.

H. Motor and Circuit Disconnects: Section 16170.

I. Panelboards: Section 16160.

PART 2 - PRODUCTS

2.01 Materials, equipment and devices related to the grounding system are specified under other sections of these Specifications.

PART 3 - EXECUTION

3.01 GENERAL:

A. Install two separate grounding systems, a service grounding system and an equipment grounding system. The service equipment, conduit systems, supports, cabinets, equipment, and neutral conductor shall be grounded in accordance with the minimum code requirements and as further indicated on the Drawings or as specified. Connect the two grounding systems together only at the main service equipment and at the secondary terminals of transformers creating separately derived distribution systems such as dry-type transformers.

3.02 SERVICE GROUNDING SYSTEM

A. General: The service grounding system is provided for the AC service neutral ground. Current return conductors, such as neutrals of the service entrance, feeder circuits and branch circuits, shall not be used for equipment grounding. Care must be exercised to insure that neutral bars are not bonded to the enclosures of panelboards, etc., which are not part of the main service equipment. Except for separately derived systems, the neutral conductors shall be grounded only in the main service equipment.

B. Common Ground Point: Establish one common ground point in the main service equipment by interconnecting the insulated neutral bus (or bar), the uninsulated equipment ground bus (or bar), and service grounding electrode conductor.

C. Neutral Disconnecting Means: Install a neutral disconnecting means in the main service equipment for disconnecting and isolating the neutral bus from the common ground. The disconnecting means may be disconnecting links in the interconnection between the insulated neutral and uninsulated equipment ground.

D. Neutral Bars: Provide an insulated neutral bar, separate from the uninsulated equipment ground bar, in all panelboards, transformers, starters, disconnect switches, cabinets, etc., which have neutral connections.

3.03 EQUIPMENT GROUNDING SYSTEM

A. General: Provide a complete equipment grounding system in accordance with the minimum code requirements and as further indicated on the Drawings or specified. The equipment ground (green conductor) consists of metallic connections to ground of non-current-carrying metal parts of the wiring system or apparatus connected to the system. The primary purpose of equipment grounding is to provide greater safety by limiting the electrical potential between non-current-carrying parts of the system and to provide a low impedance path to ground for possible ground fault currents.

B. Common Ground Point: Establish one common ground point as specified elsewhere in this section of the specifications for interconnection of the equipment grounding system and the service grounding electrode conductor.

C. Service Equipment Enclosure: Bond the enclosure of the main service equipment to the uninsulated equipment ground box (or bar) with a conductor or bar sized for 50% of the largest service overcurrent device.

D. Ground Bar: Provide an uninsulated equipment ground bar, separate from any insulated neutral bar, in all panelboards, starters, disconnect switches, cabinets, etc. for grounding the enclosure and for connecting other equipment ground conductors. The ground bar shall be an integrally mounted and braced bus bar in panelboards or a separately mounted bar adequately braced or bolted to the enclosure after thoroughly cleaning both surfaces to assure good contact. Provide solderless pressure connectors for all conductor terminations. Number and size of pressure connectors on equipment grounding bars as required for the termination of equipment grounding conductors. In addition to the active circuits, provide pressure connectors for all three-phase spares and spaces.

E. Conduits: Where metallic conduits terminate without mechanical connection to a metallic housing of electrical equipment by means of lock nut and bushings, provide ground bushing connected with a bare copper conductor to the ground bar in the electrical equipment. Metallic conduits containing ground wiring only shall be bonded to the ground wire at both conduit entrance and exit. Install grounding conductor in each nonmetallic conduit or duct except those used for telephone, sound, or low voltage signals and in all flexible conduit that does not have a built-in ground conductor. Bond the conductor at both ends to the equipment grounding system.

F. Feeders and Branch Circuits: Provide a separate green insulated equipment grounding conductor for each single or three phase feeder and each branch circuit with a three phase protective device. Provide a separate green insulated equipment grounding conductor for single phase branch circuits where indicated on the Drawings. Install the required grounding conductor in the common conduit or raceway with the related phase and/or neutral conductors and connect to the box or cabinet grounding terminal. Where there are parallel feeders installed in more than one raceway each raceway shall have a green insulated equipment ground conductor installed.

G. Devices: Install a minimum No. 12 green insulated equipment bonding conductor from a grounding terminal in the respective outlet or junction box to the green ground terminal of all receptacles and through flexible conduit to all light fixture housings and other fixed equipment.

H. Motors: Install a separate green insulated equipment grounding conductor from the equipment ground bar in the motor control center or separate starter through the conduit and flexible conduit to the ground terminal in the connection box mounted on the motor. Install the grounding conductor in the common conduit or raceway with the related motor circuit conductors.

3.04 SEPARATELY DERIVED SYSTEMS:

A. Transformers creating separately derived distribution systems, such as dry type transformers, shall utilize the equipment ground bars in the transformer enclosure for both secondary equipment ground and secondary neutral ground with separate grounding conductor extended to an approved ground electrode.

3.05 GROUNDING ELECTRODES:

A. Two service ground electrodes shall be utilized. One shall be the main cold water metallic water piping system and the other shall be a made electrode consisting of not less than twenty feet of bare copper conductor encased along the bottom of a concrete foundation footing which is in direct contact with the earth (NEC 250-H). Make the connections to the cold water pipe inside the building at the point of entrance. The grounding electrode for separately derived systems shall be approved for the application.

3.06 GROUNDING CONDUCTORS:

A. The grounding conductors for both service ground electrodes shall be insulated or bare copper, sized in accordance with NEC 250-94, including the conductor for the made electrode. The conductors shall be continuous without joint or splice and shall be installed in conduit with the conduit bonded to the conductor at each end. Install the conductor to permit the shortest and the most direct path and terminate in the main service equipment on the common ground point. Equipment grounding conductors shall be green insulated conductors equivalent to the insulation on the associated phase conductor, but not less than Type TW. The equipment grounding conductor or straps shall be sized in accordance with NEC. Where one feeder serves a series of panelboards of transformers the equipment grounding conductor shall be continuous without splices. Grounding conductors shall not be installed through metal sheathed holes. All connections shall be available for inspection and maintenance.

3.07 GROUND CONNECTIONS:

A. Clean surfaces thoroughly before applying ground lugs or clamps. If surface is coated the coating must be removed down to the bare metal. After the coating has been removed apply a non-corrosive approved compound to cleaned surface and install lugs or clamps. Where galvanizing is removed from metal it shall be painted or touched up with "Galvanoz", or equal.

3.08 TESTS

A. Remove all jumpers between the equipment ground busses and the service (neutral) ground busses in the main service panel and all separately derived systems. See Section 3.02.C.

B. For each grounding system, using a megger, measure the resistance between the two ground busses at the panel where the jumper was installed. The resistance shall be greater than 10 megohms.

C. Re-connect the equipment and service bus jumpers on all systems. See Section 3.02.C.

D. For each grounding system, using a megger, measure the resistance between the two ground busses at the panel farthest away (electrically) from the panel where the jumper was installed. The resistance shall be less than 5 ohms.

E. Submit a written report to the Engineer for approval. The service shall not be energized if the test shows more than 5 ohms, unless approved by the Architect.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16500 – LIGHTING EQUIPMENT

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Grounding: Section 16450.

D. Lamps: Section 16501.

E. Ballast and Accessories: Section 16502.

F. Fluorescent Fixtures: Section 16511.

1.02 SUBMITTALS

A. Submit for approval complete shop drawings, catalog cut, special installation instruction, photometric data, descriptive literature, and actual fixture when requested by Architect.

B. Each fixture submittal shall be inclusive of lamp manufacturer's data for lamp to be furnished for each particular fixture. Review of fixtures will not be started until this provision has been met.

1.03 PRIOR APPROVAL:

A. All proposed substitutions to the specified fixtures shall be submitted for approval a minimum of 10 calendar days prior to bid opening. The submittal for approval shall include all data called for in submittals along with an actual fixture proposed to be substituted. When a substitution is accepted as an equal and the substituted fixture is awarded for this Contract as the fixture to be furnished, then the substituted fixture may be retained by the Contractor and shall be the last fixture of that type to be installed on this project. All of the same type fixtures shall be equal to or better than that fixture retained.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Furnish all lighting fixtures throughout of the type indicated on the drawings, complete with lamps, sockets, wiring, fitters, hangers, plaster rings, canopies, etc., as required.

2.02 METAL HALIDE FIXTURES:

A. All metal halide fixtures shall be provided with a clear glass lens integral to fixture.

2.03 RECESSED FIXTURES

A. All recessed fixtures shall be provided with thermal protection as required by National Electrical Code.

PART 3 - EXECUTION

3.01 SUPPORTS:

A. Support ceiling fixtures by anchorage to the ceiling only where the ceiling is concrete or masonry units. For ceiling of other construction, anchor ceiling fixtures to metal or wood supports provided for the purpose, of suitable strength and stability, adequately attached to and supported by joists, trusses or other structural members, unless other methods of support are specifically approved by the Architect. Where lay-in construction is used fixtures shall be of the lay-in type. Fixtures shall be supported at all four corners to structure above. Coordinate supports for lay-in fixtures with ceiling Installer/Sub-Contractor.

3.02 LOW DENSITY CEILING:

A. Special attention is directed to the code restriction against mounting fluorescent fixtures on combustible low density cellulose fiberboard ceilings (NEC 410-77b). If fixtures are to be installed that are not UL approved for this condition a suitable mounting arrangement shall be developed which meets the approval of the Architect.

3.03 CEILING TRIM AND MEANS OF SUPPORT:

A. The ceiling trim and means of support of recessed fixtures shall be coordinated with the type of ceiling to be installed within or on to insure proper installation.

3.04 SUSPENDED FIXTURES:

A. Provide swivel hangers and canopies to insure a plumb installation. For single unit suspended fluorescent fixtures provide tubing or stems for wiring at one point and a tubing or rod suspension provided for each unit of chassis. Provide 3/16" diameter rods minimum.

3.05 BLOCKING:

A. Protect housing of recessed lighting fixtures during installation by internal blocking or framing to prevent distortion of sides or dislocation of threaded lugs which upon completion must be in perfect alignment and match the corresponding holes in frames or rims so that holding screws can be installed freely without forcing and remain so they can be easily removed when servicing. Threads to receive holding screws shall be chased after plating and finishing to insure easy installation and removal of knurled headed screws by thumb pressure.

3.06 LAMP GUARDS:

A. Provide wire guards on open type fluorescent fixtures to prevent lamps from falling.

3.07 CLEAN UP:

A. At final inspection the fixtures and lighting equipment shall be in first class operating order, in perfect condition as to finish, free from defects, completely lamped, clean and free from dust, plaster or paint spots, and complete with the required glassware, reflectors, side panels, louvers or other components necessary to complete the fixtures.

3.08 CEILING TRIM:

A. Furnish proper ceiling frames for the ceiling material in which recessed fixtures are to be installed, verify prior to ordering. Rims of all fixtures that overlap ceilings shall be installed tight and snug against the ceiling surfaces so that no light leakage occurs around the rim. If unevenness or surface of fixture allows light to show, then this contractor shall provide soft sponge filler or gasket on all fixtures requiring this treatment, and as approved by Architect.

3.09 FIXTURES

A. Special attention is directed to the special provisions for flush and recessed fixtures in the National Electrical Code.

1. All recessed fixtures shall have top connections to the outlet boxes installed in accordance with the code.

2. Connection to lay in fixtures shall be made with flexible connections of 4'-0" minimum, 6’-0” maximum length. Fixture-to-fixture wiring is not permitted.

3. All recessed fixtures shall be furnished with UL listed thermal protective device.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16501 - LAMPS

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. Grounding: Section 16450.

C. Lighting Equipment: Section 16500.

D. Ballast and Accessories: Section 16502.

PART 2 - PRODUCTS

2.01 LED LAMPS:

A. LED lamps shall be 3500 degree or approved equal. The wattage shall be as per schedule along with color and lumens. Rated life shall be 50,000 hours.

2.02 LED DRIVERS:

A. LED drivers shall include the following features unless otherwise indicated:
   1. Minimum Efficiency: 85% at full load
   2. Minimum Operating Ambient Temperature: -20°C. (-4°F)
   3. Input Voltage: 120-277V (+/-10%) at 60Hz
   4. Integral sort circuit, open circuit, and overload protection.
   5. Power Factor: ≥0.95Total Harmonic Distortion: ≤20%
   6. Comply with FCC 47 CFR Part 15.

2.03 LED MODULES:

A. LED modules shall include the following features unless otherwise indicated:
   1. Comply with IES LM-79 and LM-80 requirements
   2. Minimum CRI 80 and color temperature 3500 K unless otherwise specified in LIGHTING FIXTURE SCHEDULE
   3. Input Voltage: 120-277V (+/-10%) at 60Hz
   4. Integral sort circuit, open circuit, and overload protection.
   5. Power Factor: ≥0.95Total Harmonic Distortion: ≤20%
   6. Comply with FCC 47 CFR Part 15.

2.04 MANUFACTURERS:

A. CREE, Phillips, Sylvania are approved. Where a specific manufacturer's product is mentioned, then it shall be so furnished.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. The Contractor shall install new lamps in all lighting fixtures. Installation of the new lamps shall be made seven (7) days before final inspection, unless otherwise approved by the Architect in writing.

END OF SECTION

SECTION 16511 – LED FIXTURES

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Raceways: Section 16110.

D. Grounding: Section 16450.

E. Lighting Equipment: Section 16500.

F. Lamps: Section 16501.

1.02 SUBMITTALS:

A. Submit complete shop drawings indicating construction of fixture including lens nominal thickness, photometry's and housing thickness.

PART 2 - PRODUCTS

2.01 LED FIXTURES:

A. All fixtures and supports shall be quiet in operation. Louvers, shields, reflectors and all sections of the channel structure shall be securely held in position. LED drivers, modules and reflectors shall be accessible, serviceable and replaceable from below the ceiling.

2.02 FINISH:

A. Bonderized or equal treatment on all steel parts prior to applying finish. Metal parts shall be aluminum, brass, copper, bronze or steel, with baked white enamel finish unless otherwise noted on the drawings.

2.03 HOUSING:

A. HOUSING: LED drivers, modules shall be the product of the same manufacturer.

PART 3 - EXECUTION

3.01 LAY-IN FIXTURES:

A. All lay in fixtures shall be adequately supported on all four corners to the structure and not to the ceiling alone.

3.02 SURFACE MOUNTED FIXTURES:

A. All surface mounted fixtures shall be furnished with top plates whenever applicable.

END OF SECTION

TECHNICAL SPECIFICATIONS

SECTION 16722 – FIRE ALARM SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section of the specifications includes the furnishing, installation, and connection of the microprocessor controlled, intelligent reporting fire alarm equipment required to form a complete coordinated system ready for operation. It shall include, but not be limited to, alarm initiating devices, alarm notification appliances, control panel, auxiliary control devices, annunciators, and wiring as shown on the drawings and specified herein.

B. The fire alarm system shall comply with requirements of NFPA Standard No. 72 for protected premises signaling systems except as modified and supplemented by this specification. The system shall be electrically supervised and shall monitor the integrity of all conductors.

C. The fire alarm system shall comply with requirements of Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities.

1.02 SCOPE

A. A new intelligent reporting, microprocessor controlled fire detection system shall be installed in accordance with the specifications and drawings.

B. Basic Performance:

1. Alarm, trouble and supervisory signals from all intelligent reporting devices shall be encoded onto an NFPA Style 7 (Class A) signaling line circuit.

2. Initiation device circuits shall be wired Class A (NFPA Style D).

3. Indicating appliance circuits shall be wired Style Z (Class A).

4. Digitized electronic signals shall employ check digits or multiple polling.

5. A single ground or open on the system Signaling Line Circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.

6. Alarm signals arriving at the main FACP shall not be lost following a power failure (or outage) until the alarm signal is processed and recorded.

C. Basic System Functional Operation: When a fire alarm condition is detected and reported by one of the system initiating devices or appliances, the following functions shall immediately occur:

1. The System Alarm LED shall flash.

2. A local piezo electric signal in the control panel shall sound.

3. The 80 character LCD display shall indicate all information associated with the Fire Alarm condition, including the type of alarm point and it's location within the protected premises.

4. Printing and history storage equipment shall log the information associated each new Fire Alarm Control Panel condition, along with time and date of occurrence.

5. All system output programs assigned via control by event equations to be activated by the particular point in alarm shall be executed, and the associated System Outputs (alarm indicating appliances and/or relays) shall be activated.

1.03 SUBMITTALS

A. General:

1. Two copies of all submittals shall be submitted to the Architect/Engineer for review.

2. All references to manufacturer's model numbers and other pertinent information herein is intended to establish minimum standards of performance.

B. Shop Drawings:

1. Sufficient information, clearing presented, shall be included to determine compliance with drawings and specifications.

2. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.

C. Manuals:

1. Submit simultaneously with the shop drawings, complete operating and maintenance manual listing the manufacturer's name(s) including technical data sheets.

2. Wiring diagrams shall indicate internal wiring for each item of equipment and the interconnections between the items of equipment.

3. Provide a clear and concise description of operation that gives, in detail, the information required to properly operate the equipment and system.

D. Certifications: Together with the shop drawing submittal, submit a certification from the major equipment manufacturer indicating that the proposed supervisor of installation and the proposed performer of contract maintenance is an authorized representative of the major equipment manufacturer. Include names and addresses in the certification.

1.04 GUARANTY: All work performed and all material and equipment furnished under this contract shall be free from defects and shall remain so for a period of at least one (1) year from the date of acceptance. The full cost of maintenance, labor and materials required to correct any defect during this one year period shall be included in the submittal bid.

1.05 APPLICABLE SPECIFICATIONS: The specifications and standards listed below form a part of this specification. The system shall fully comply with these standards.

A. National Fire Protection Association (NFPA) - USA:

No. 12	CO2 Extinguishing Systems
No. 12A &B	Halon Extinguishing Systems
No. 15	Water Spray Systems

No. 16	Foam/Water Deluge and Spray Systems
No. 70	National Electrical Code (NEC)
No. 71	Central Station Signaling Systems
No. 72	Protective Signaling Systems
No. 72E	Automatic Fire Detectors
No. 72G	Notification Appliances for Protective Signaling Systems
No. 72H	Testing Procedures for Signaling Systems
No. 101	Life Safety Code

B. Underwriters Laboratories Inc. (UL) - USA:

No. 268	Smoke Detectors for Fire Protective Signaling Systems
No. 864	Control Units for Fire Protective Signaling Systems
No. 268A	Smoke Detectors for Duct Applications
No. 521	Heat Detectors for Fire Protective
No. 464	Audible Signaling Appliances
No. 38	Manually Actuated Signaling Boxes
No. 346	Waterflow Indicators for Fire Protective Signaling Systems.
No. 1076	Control Units for Burglar Alarm Proprietary Protective Signaling Systems
No. 1971	Visual Indicating Appliances

C. Local and State Building Codes:

D. All requirements of the Authority Having Jurisdiction (AHJ).

1.06 APPROVALS

A. The system shall have proper listing and/or approval from the following nationally recognized agencies:

UL	Underwriters Laboratories Inc.
FM	Factory Mutual
ULC	Underwriters Laboratories Canada

B. The system shall be listed by the national agencies as suitable for extinguishing release applications.

PART 2 - PRODUCTS

2.01 EQUIPMENT AND MATERIAL, GENERAL

A. All equipment and components shall be new, and the manufacturer's current model. The materials, appliances, equipment and devices shall be tested and listed by a nationally recognized approvals agency for use as part of a protected premises protective signaling (fire alarm) system.

B. All equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.

C. All Equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place (e.g., detectors shall not be supported solely by suspended ceilings). Fasteners and supports shall be adequate to support the required load.

2.02 CONDUIT AND WIRE

A. Conduit:

1. Conduit shall be in accordance with The National Electrical Code (NEC), local and state requirements.

2. All wiring shall be installed in conduit or raceway. Conduit fill shall not exceed 40% of interior cross sectional area where three or more cables are contained within a single conduit.

3. Cable must be separated from any open conductors of Power, or Class I circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-29.

4. Conduit shall not enter the Fire Alarm Control Panel, or any other remotely mounted Control Panel equipment or backboxes, except where conduit entry is specified by the FACP manufacturer.

5. Conduit shall be ½ inch minimum.

B. Wire:

1. All fire alarm system wiring shall be new.

2. Wiring shall be in accordance with local, state, and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for Initiating Device Circuits and Signaling Line Circuits, and 14 AWG (1.63 mm) for Indicating Appliance Circuits.

3. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.

4. Wiring used for the multiplex communication loop shall be twisted and shielded and installed in conduit unless specifically excepted by the fire alarm equipment manufacturer. The system shall permit use of IDC and IAC wiring in the same conduit with the communication loop.

5. All field wiring shall be completely supervised.

C. Terminal Boxes, Junction Boxes and Cabinets: All boxes and cabinets shall be UL Listed for their use and purpose.

D. Initiating circuits shall be arranged to serve like categories (manual, smoke, water flow). Mixed category circuitry shall not be permitted except on signaling line circuits connected to intelligent reporting devices.

E. The Fire Alarm Control Panel shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the Main Power Distribution Panel as FIRE ALARM. Fire Alarm Control Panel Primary Power wiring shall be 12 AWG. The Control Panel Cabinet shall be grounded securely to either a cold water pipe or grounding rod.

2.03 MAIN FIRE ALARM CONTROL PANEL

A. The FACP shall be a NOTIFIER Model AFP-200, and shall contain a microprocessor based Central Processing Unit (CPU). The CPU shall communicate with and control the following types of equipment used to make up the system: intelligent detectors, addressable modules, printer, annunciators, and other system controlled devices.

B. System Capacity and General Operation:

1. The control panel shall provide, or be capable of expansion to 198 intelligent/addressable devices plus 103 control circuits.

2. The Fire Alarm Control Panel shall include a full featured operator interface control and annunciation panel that shall include a backlit Liquid Crystal Display, individual, color coded system status LED's, and an alphanumeric keypad for the Field Programming and Control of the Fire Alarm System.

3. All programming or editing of the existing program in the system shall be achieved without special equipment and without interrupting the alarm monitoring functions of the Fire Alarm Control Panel.

4. The FACP shall provide the following features:

Drift Compensation to extend detector accuracy over life.
Sensitivity Test, meeting requirements of NFPA 72E.
Maintenance Alert to warn of excessive compensation.
System Status Reports to display or printer.
Alarm Verification, with verification counters.
PAS presignal, meeting NFPA 72 requirements.
Rapid manual station reporting (under 2 seconds).
Non-Alarm points for general (non-fire) control.
Periodic Detector Test, conducted automatically by software.
Pre-alarm for advanced fire warning.
Counting "cross-zone" options.
March time and temporal coding options.
Walk Test, with check for two detectors set to same address.
Security Monitor Points, meeting requirements of UL 1076.
Control-By-Time for non-fire operations, with holidays.
Day/Night automatic adjustment of detector sensitivity.
Device Blink Control for sleeping areas.

C. Central Microprocessor:

1. The Microprocessor Unit shall communicate with, monitor, and control all external interfaces with the control panel. It shall include EPROM for system program storage; non-volatile memory for building-specific program storage; and a "watch dog" timer circuit to detect and report microprocessor failure.

2. The Microprocessor Unit shall contain and execute all control-by-event programs for specific action to be taken if an alarm condition is detected by the system. Such control-by-event programs shall be held in non-volatile programmable memory, and shall not be lost even if system primary and secondary power failure occurs.

3. The Microprocessor Unit shall also provide a real-time Clock for time annotation of system displays, printer, and history file. The Time-Of-Day and date shall not be lost if system primary and secondary power supplies fail. The real-time Clock may also be used to control non-fire functions at programmed time-of-day, day-of-week, and day-of-year.

D. Display:

1. The Display shall provide all the controls and indicators used by the system operator and may also be used to program all system operational parameters.

2. The Display shall include status information and custom alphanumeric labels for all Intelligent Detectors, Addressable Modules, and Software zones.

3. The Display shall provide an 80-character back-lit alphanumeric Liquid Crystal Display (LCD). It shall also provide 5 Light-Emitting-Diodes (LED's), that will indicate the status of the following system parameters: AC POWER, SYSTEM ALARM, SYSTEM TROUBLE, SIGNAL SILENCED, SUPERVISORY, and PRE-ALARM.

4. The Display shall provide a 21-key touch key-pad with control capability to command all system functions, entry of any alphabetic or numeric information, and field programming. Two different password levels shall be provided to prevent unauthorized system control or programming.

5. The Display shall include the following operator functions: SIGNAL SILENCE, RESET, DRILL, and ACKNOWLEDGE.

E. SLC Loop Interface:

1. The SLC Interface shall provide power to, and communicate with, all of the Intelligent/ Addressable Detectors and Addressable Modules over a single pair of wires. This SLC Loop shall be capable of operation as NFPA Style 4, Style 6, or Style 7.

2. The Loop Interface Board shall receive analog information from all Intelligent Detectors that shall be processed to determine whether normal, alarm, or trouble conditions exist for each detector. The software shall automatically maintain the detector's desired sensitivity level by adjusting for the effects of environmental factors, including the accumulation of dust in each detector. The analog information may also be used for automatic detector testing and for the automatic determination of detector maintenance requirements.

3. The detector software shall meet NFPA 72E requirements and be certified by UL as a calibrated sensitivity test instrument.

4. The detector software shall allow manual or automatic sensitivity adjustment.

F. Serial Interfaces:

1. An EIA-232 interface between the Fire Alarm Control Panel and UL Listed Electronic Data Processing (EDP) peripherals shall be provided.

2. The EIA-232 interface shall allow the use of printers, CRT monitors, and PC compatible computers.

3. The EIA-485 port for the serial connection of the optional Annunciators and remote LCD displays shall be provided.

4. The EIA-485 interface may be used for network connection to a Proprietary Receiving Unit.

G. Enclosures:

1. The control panel shall be housed in a UL Listed cabinet suitable for surface or semi-flush mounting. Cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.

2. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators.

H. All interfaces and associated equipment are to be protected so that they will not be affected by voltage surges or line transients consistent with UL standard 864.

I. Optional plug-in modules shall be provided for NFPA 72B and NFPA 72C transmitters.

J. Power Supply:

1. The Power Supply shall operate on 120 VAC, 60 Hz, and shall provide all necessary power for the FACP.

2. It shall provide 5.0 amps of usable indicating appliance power, using a switching 24 VDC regulator.

3. It shall provide a battery charger for 24 hours of standby using dual-rate charging techniques for fast battery recharge.

4. It shall provide a very low frequency sweep earth detect circuit, capable of detecting earth faults on sensitive addressable modules.

5. It shall be power-limited using Positive Temperature Coefficient (PTC) resistors.

6. It shall provide optional meters to indicate battery voltage and charging current.

K. Field Wiring Terminal Blocks: For ease of service, all wiring terminal blocks for I/O interfaces shall be the plug-in type and have sufficient capacity for 18 to 12 AWG wire. Terminal blocks permanently fixed or mounted are not acceptable.

L. Operators Controls:

1. Acknowledge Switch:

a. Activation of the control panel Acknowledge switch in response to new Alarm and/or Trouble shall silence the local panel piezo electric signal and change the Alarm and Trouble LED’s from flashing mode to steady-ON mode. If multiple Alarm or Trouble conditions exist, depression of this switch shall advance the 80-character LCD display to the next Alarm or Trouble condition.

b. Depression of the Acknowledge switch shall also silence all remote annunciator piezo sounders.

2. Signal Silence Switch: Activation of the Signal Silence Switch shall cause all programmed Alarm Indicating Appliances and relays to return to the normal condition after an alarm condition. The selection of indicating circuits and relays that are silenceable by this switch shall be fully field programmable within the confines of all applicable standards. The FACP software shall include silence inhibit and auto-silence timers.

3. System Reset Switch: Activation of the System Reset Switch shall cause all electronically-latched initiating devices, appliances or software zones, as well as all associated output devices and circuits, to return to their normal condition. Holding the RESET switch shall perform a Lamp Test function.

4. Drill (Evacuate) Switch: Press and hold of the Drill Switch shall activate all Indicating Appliance circuits. The Drill function shall latch until press of Signal Silence or Reset.

2.04 SYSTEM COMPONENTS

A. Electronic Chimes:

1. Electronic chimes shall operate on 24 VDC nominal.

2. Electronic chimes shall have field-selectable choice of single-stroke or vibrating operation, with sound level adjustable to 83 dBA at 10 feet and chime tone adjustable from 800 to 1200 Hz.

3. Shall be flush or surface mounted as shown on plans.

4. Shall be placed 80 inches (2,030 mm) above the highest floor level within the space, or 6 inches (152 mm) below the ceiling, whichever is lower.

B. Strobe Lights:

1. Shall operate on 24 VDC nominal.

2. Shall meet the requirements of the ADA as defined in UL standard 1971 and shall meet the following criteria:

a. Unless otherwise specified on the drawings, the intensity shall be a minimum of 117 candela.

b. The flash rate shall be a minimum of one flash per second at 24 VDC.

c. The appliance shall be placed 80 inches (2,030 mm) above the highest floor level within the space, or 6 inches (152 mm) below the ceiling, whichever is lower.

d. The strobes shall be for vertical sidewall mounting only with the clear lens window at the lower part of the lens lettering properly reading vertically.

C. Electronic Chime/Strobe Combination Devices:

1. Shall meet the requirements of individual units listed above.

D. Addressable Manual Stations:

1. Addressable Manual Stations shall be provided to connect to the Fire Alarm Control Panel Signaling Line Circuit (SLC) Loops. Up to 99 addressable manual stations may be connected to one SLC loop.

2. The Manual Station shall, on command from the Control Panel, send data to the panel representing the state of the manual switch. Manual Fire Alarm Stations shall use a key operated test-reset lock, and shall be designed so that after actual Emergency Operation, they cannot be restored to normal use except by the use of a key.

3. All operated stations shall have a positive, visual indication of operation that cannot be reset without the use of a key.

4. Manual Stations shall be constructed of painted die-cast metal, with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters. Model RS-IT-KL.

5. Stations shall be suitable for surface mounting, or semi-flush mounting as shown on the plans, and shall be installed not less than 42 inches, or more than 48 inches above the finished floor.

6. The Manual Station shall be addressable.

E. Intelligent Photoelectric Smoke Detectors:

1. Smoke detectors shall be intelligent and addressable devices, and shall connect with two wires to one of the Fire Alarm Control Panel Signaling Line Circuit loops. Up to 99 intelligent detectors may connect to one SLC loop.

2. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog level of smoke density.

3. The detectors shall be ceiling-mount and shall include a twist-lock base.

4. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

5. The detector shall provide address-setting means on the detector head using decimal switches. Because of the possibility of installation error, systems that use binary jumpers on dip-switches to set the detector address are not acceptable. The detectors shall also store an internal identifying code that the control panel shall use to identify the type of detector.

6. The detectors shall provide dual alarm and power LED’s. Both LED’s shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel. Both LED’s may be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. If required, the flashing mode operation of the detector LED’s shall be controlled

through the system field program. An output connection shall also be provided in the base to connect an external remote alarm LED.

7. The detector sensitivity shall be set through the Fire Alarm Control Panel, and shall be adjustable in the field through the field programming of the system. Sensitivity may be automatically adjusted by the panel on a time-of-day basis.

8. using software in the FACP, the detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72E.

9. Install detectors where shown or noted on drawings.

F. Intelligent Ionization Type Smoke Detectors:

1. Smoke Detectors shall be Intelligent and Addressable, and shall connect with two wires to one of the Fire Alarm Control Panel Signaling Line Circuits. Up to 99 intelligent detectors may connect to one SLC loop.

2. The detectors shall use the dual-chamber ionization principal to measure products of combustion and shall, on command from the control panel, send data to the panel representing the analog level of products of combustion.

3. The detectors shall be ceiling-mount and shall include a twist-lock base.

4. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself, by activating a magnetic switch, or may be activated remotely on command from the control panel.

5. The detectors shall provide address-setting means on the detector head using decimal switches. Because of the possibility of installation error, systems that use binary jumpers or dip-switches to set the address are not acceptable. They shall also store an internal identifying code that the control panel shall use to identify the type of detector.

6. The detectors shall provide dual alarm and power LED’s. Both LED’s shall flash under normal conditions. In certain applications, LED’s may be selected to be polled without flashing through system programming. Both LED’s may be placed into steady illumination by the control panel, indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED.

7. The detector sensitivity shall be set through the Fire Alarm Control Panel, and shall be adjustable in the field through the field programming of the system. Sensitivity may be automatically adjusted to the panel on a time-of-day basis.

8. using software in the FACP, the detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72E.

9. Install detectors where shown or noted on drawings.

Intelligent Heat Detectors:

1. Heat Detectors shall be Intelligent and Addressable devices, and shall connect with two wires to one of the Fire Alarm Control Panel Signaling Line Circuits. Up to 99 intelligent heat detectors may connect to one SLC loop.

2. The detectors shall use an electronic sensor to measure thermal conditions caused by a fire and shall, on command from the control panel, send data to the panel representing the analog level of such thermal measurements.

3. The detectors shall be ceiling-mount and shall include a twist-lock base.

4. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel. Such a test may be initiated at the detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

5. The detectors shall provide address-setting means on the detector head using a decimal switch. Because of the possibility of installation error, systems that use binary jumpers or dip-switches to set the address are not acceptable.

6. The detectors shall provide dual alarm and power LED's. Both LED's shall flash under normal conditions. In certain applications, LED's may be selected to be polled without flashing through system programming. Both LED's may be placed into steady illumination by the control panel, indicating that an alarm condition has been detected.

7. An output connection shall also be provided in the base to connect an external remote alarm LED.

8. Install detectors where shown or noted on drawings.

H. Intelligent In-duct Smoke Detector Housing:

1. In-Duct Smoke Detector Housing shall accommodate either an intelligent Ionization sensor or a Intelligent Photoelectric Sensor, either of that provides continuous analog monitoring and alarm verification from the panel.

2. When sufficient smoke is sensed, an alarm signal is initiated at the FACP, and appropriate action taken to change over air handling systems to help prevent the rapid distribution of isolation of toxic smoke and fire gases throughout the areas served by the duct system.

I. Monitor Module:

1. Addressable Monitor modules shall be provided to connect one supervised IDC zone of conventional Alarm Initiating Devices (any NO dry contact device) to one of the Fire Alarm Control Panel Signaling Line Circuit (SLC) Loops.

2. The Monitor Module shall mount in a 4-inch square, 2-1/8" deep electrical box.

3. The IDC zone may be wired for Style D or Style B operation. The Monitor Module shall provide address-setting means using decimal switches and shall also store an internal identifying code that the Fire Alarm Control Panel (FACP) shall use to identify

the type of device. Modules that use binary jumpers or dip-switches are subject to installation errors and are not acceptable. A LED shall be provided that shall flash under normal conditions, indicating that the Monitor Module is operational and in regular communication with the control panel.

4. For difficult to reach areas, the Monitor Module shall be available in a miniature package and shall be no larger than 2-3/4" x 1-¼" x ½". This version need not include Type D or a LED.

J. Control Module:

1. Addressable Control Modules shall be provided to supervise and control the operation of one conventional Indicating Appliance Circuit (IAC) of compatible, 24 VDC powered, polarized Audio/Visual Indicating Appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contact relay.

2. The Control Module shall mount in a standard 4-inch square, 2-1/8" deep electrical box, or to a surface mounted backbox, or directly in the Fire Alarm Control Panel.

3. The IAC may be wired for Style Z or Style Y IAC (Up to 1 Amp of Inductive A/V Signal, or 2 Amps of Resistive A/V Signal) operation, or as a Dry Contact (Form C) Relay. the relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or IACs may be energized at the same time on the same pair of wires.

4. Audio/Visual Power shall be provided by a separate supervised Power Loop from the main Fire Alarm Control Panel or from a supervised, UL listed Remote Power Supply.

5. The Control Module shall provide address-setting means using decimal switches and shall also store an internal identifying code that the Control Panel shall use to identify the type of device. Modules that use binary jumpers or dip-switches are subject to installation errors and are not acceptable. A LED shall be provided that shall flash under normal conditions, indicating that the Control Module is operational and is in regular communication with the Control Panel.

6. A magnetic test switch shall be provided to test the module without opening or shortening it's IAC wiring.

K. Isolator Module:

1. Isolator Modules shall be provided to automatically isolate wire-to-wire short circuits on an SLC loop. The isolator Module shall limit the number of modules or detectors that may be rendered inoperative by a short circuit fault on the SLC Loop. At least one isolator module shall be provided for each floor or protected zone of the building.

2. If a wire-to-wire short occurs, the Isolator Module shall automatically open-circuit (disconnect) the SLC loop. When the short circuit condition is corrected, the Isolator Module shall automatically reconnect the isolated section of the SLC loop.

3. The Isolator Module shall not require any address-setting, and its operations shall be totally automatic. It shall not be necessary to replace or reset an Isolator Module after it's normal operation.

4. The Isolator Module shall mount in a standard 4-inch deep electrical box, in a surface mounted backbox, or in the Fire Alarm Control Panel. It shall provide a single LED that shall flash to indicate that the Isolator is operational and shall illuminate steadily to indicate that a short circuit condition has been detected and isolated.

L. Water Flow Switches:

1. Flow switches shall be integral, mechanical, non-coded, non-accumulative retard type.

2. Flow switches shall have an alarm transmission delay time that is conveniently adjustable from 0 to 60 seconds. Initial settings shall be 30-45 seconds.

3. Flow switches shall be located a minimum of one (1) foot from a fitting that changes the direction of the flow and a minimum of three (3) feet from a valve.

4. Flow switches shall be provided and connected under this section and installed by mechanical contractor.

M. Sprinkler and Standpipe Valve Supervisory Switches:

1. Each sprinkler system water supply control valve riser or zone control valve, and each standpipe system riser control valve shall be equipped with a supervisory switch. Standpipe hose valves, and test and drain valves shall not be equipped with supervisory switches.

2. Each Post Indicator Valve (PIV) or main gate valve shall be equipped with a supervisory switch.

3. Mount switch so as not to interfere with the normal operation of the valve and adjust to operate within two revolutions toward the closed position of the valve control, or when the stem has moved no more than one-fifth of the distance from its normal position.

4. The mechanism shall be contained in a weatherproof aluminum housing, that shall provide a 3/4 inch tapped conduit entrance and incorporate the necessary facilities for attachment to the valves.

5. Switch housing to be finished in red baked enamel.

6. The entire installed assembly shall be tamper proof and arranged to cause a switch operation if the housing cover is removed, or if the unit is removed from its mounting.

7. Valve supervisory switches shall be provided and connected under this section and installed by mechanical contractor.

N. LCD Alphanumeric Display Annunciator:

1. The Alphanumeric Display Annunciator shall be a supervised, local or remotely located back-lit LCD display containing a minimum of eighty (80) characters for alarm annunciation in clear English text.

2. The LCD Annunciator shall display all alarm and trouble conditions in the system.

3. The Annunciator shall connect to an EIA 485 interface.

4. Up to 4 LCD annunciators may be connected to the interface, each with Acknowledge, Silence and Reset controls for the FACP.

2.05 BATTERIES

A. Shall be 12 volt, Gel-Cell type (two required).

B. Battery shall have sufficient capacity to power the fire alarm system for not less than twenty-four hours plus 5 minutes of alarm upon a normal AC power failure.

C. The batteries are to be completely maintenance-free. No liquids are required. Fluid level checks refilling, spills and leakage shall not be required.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.

B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas. Smoke detectors shall not be installed prior to the system programming and test period. If construction is on-going during this period, measures shall be taken to protect smoke detectors from contamination and physical damage.

C. All fire detection and alarm system devices, control panels and remote annunciators shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.

3.02 TEST: Provide the service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment to technically supervise and participate during all of the adjustments and tests for the system.

1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.

2. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.

3. Verify activation of all flow switches.

4. Open initiating device circuits and verify that the trouble signal actuates.

5. Open and short signaling line circuits and verify that the trouble signal actuates.

6. Open and short indicating appliance circuits and verify that trouble signal actuates.

7. Ground all circuits and verify response of trouble signals.

8. Check presence and audibility of tone at all alarm notification devices.

9. Check installation, supervision, and operation of all intelligent smoke detectors using the Walk Test.

10. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.

11. When the system is equipped with optional features, the manufacturer's manual should be consulted to determine the proper testing procedures. This is intended to address such items as verifying controls performed by individually addressed or grounded devices, sensitivity monitoring, verification functionality and similar.

3.03 FINAL INSPECTION: At the final inspection, a factory trained representative of the manufacturer of the major equipment shall demonstrate that the systems function properly in every respect.

3.04 INSTRUCTION

A. Provide instruction as required for operating the system. "Hands-on" demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.

B. The Contractor and/or the Systems Manufacturer's representatives shall provide a typewritten "Sequence of Operation" to the Owner.

END OF SECTION

SECTION 16740 – TELEPHONE SYSTEM

PART 1 - GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

A. The general provisions of the Contract, including General Conditions, Supplementary General Conditions (if any) and General Requirements apply to the work specified in this section.

B. General Provisions: Section 16010.

C. Raceways: Section 16110.

D. Wires and Cables: Section 16120.

E. Outlet Boxes: Section 16130.

F. Wiring Devices: Section 16140.

G. Cabinets: Section 16133.

H. Motor and Circuit Disconnects: Section 16170.

I. Panelboards: Section 16160.

J. Grounding: Section 16450.

1.02 TELEPHONE SYSTEMS, GENERALLY

A. The telephone system shall be as indicate on the drawings and as specified.

B. Conduit feeder connects from the main telephone equipment board to the service point location as coordinated with the local telephone company. Conduit branches connect the telephone outlets to the terminal boards.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Cabinets, outlet boxes, device plates, conduit, pull wires, etc. shall be as indicated on the drawings and specified elsewhere in these specifications.

PART 3 - EXECUTION

3.01 CONDUIT and WIRING:

A. Install in accordance with Sections 16110 and 16120.

3.02 PULL WIRES:

A. Install pull wire in each telephone conduit.

3.03 GROUND:

A. Continuous No. 6 ground at bottom of terminal board or cabinet with No. 6 ground wire in 1/2 inch conduit to the building grounding system.

3.04 CONDUIT STUBS:

A. Stub feeder conduits to the left side of the terminal board and branch conduits to the right side of the terminal board unless otherwise noted.

3.05 DUPLEX RECEPTACLES:

A. Locate continuous wiremold plugmold receptacle strip at the bottom of the board, above ground, with devices at 12" O.C., unless otherwise noted.

3.06 COORDINATION:

A. Details, exact locations and arrangement of the telephone facilities shall be coordinated with and as recommended and approved by local communications company. This includes the location and orientation of receptacles, service entrance conduits and conduit stubs in the equipment room.

END OF SECTION

2015 PREVAILING WAGE RATES
CARSON CITY

DATE OF DETERMINATION: October 1, 2014

APPLICABLE FOR PUBLIC WORKS PROJECTS BID/AWARDED OCTOBER 1, 2014 THROUGH SEPTEMBER 30, 2015*

***Pursuant to NAC 338.040(3), "After a contract has been awarded, the prevailing rates of wages in effect at the time of the opening of bids remain in effect for the duration of the project."**

As Amendments/Addenda are made to the wage rates, such will be posted to sites of the respective counties. Please review regularly for any amendments posted or contact our offices directly for further assistance with any amendments to the rates.

LABORER
MECHANICAL INSULATOR
MILLWRIGHT
OPERATING ENGINEER
OPERATING ENG. STEEL FABRICATOR/ERECTOR
OPERATING ENGINEER-PILEDRIVER
PAINTER
PILEDRIVER (NON-EQUIPMENT)
PLASTERER
PLUMBER/PIPEFITTER
REFRIGERATION
ROOFER (Does not include sheet metal roofs)
SHEET METAL WORKER
SPRINKLER FITTER
SURVEYOR (NON-LICENSED)
TAPER
TILE /TERRAZZO WORKER/MARBLE MASON
TRAFFIC BARRIER ERECTOR
TRUCK DRIVER
WELL DRILLER
LUBRICATION AND SERVICE ENGINEER (MOBILE AND GREASE RACK)
SOIL TESTER (CERTIFIED)
SOILS AND MATERIALS TESTER

PREVAILING WAGE RATES INCLUDE THE BASE RATE AS WELL AS ALL APPLICABLE FRINGES

NRS 338.010(21) "Wages" means:

(a) The basic hourly rate of pay; and
(b) The amount of pension, health and welfare, vacation and holiday pay, the cost of apprenticeship training or other similar programs or other bona fide fringe benefits which are a benefit to the workman.

NRS 338.035 Discharge of part of obligation of contractor or subcontractor engaged on public work to pay wages by making certain contributions in name of workman. The obligation of a contractor engaged on a public work or a subcontractor engaged on a public work to pay wages in accordance with the determination of the Labor Commissioner may be discharged in part by making contributions to a third person pursuant to a fund, plan or program in the name of the workman.

CRAFT	RATE
AIR BALANCE TECHNICIAN	**ADD SHEET METAL ZONE RATE**
Air Balance-Journeyman	52.68
Air Balance-Foreman	55.55
Air Balance-General Foreman	58.42
ALARM INSTALLER	
Alarm Installer-Journeyman	25.69
BOILERMAKER	
Boilermaker	65.94
BRICKLAYER	**ADD ZONE RATE**
Bricklayer-Journeyman	33.70
Bricklayer-Foreman	34.95
Bricklayer-General Foreman	35.70
CARPENTER	**ADD ZONE RATE**
Carpenter-Journeyman	40.27
Carpenter-Foreman	43.02
CEMENT MASON	**ADD ZONE RATE**
Cement Mason-Journeyman	35.75
Cement Mason-Foreman	38.00
ELECTRICIAN COMMUNICATION TECHNICIAN	**ADD ZONE RATE**
Communication Technician-Installer	32.40
Communication Technician	35.86
Communication-Senior Technician	38.53
ELECTRICIAN-LINE	
Electrician-Groundman	45.49
Electrician-Lineman	67.18
Electrician-Foreman	73.02

Electrician-General Foreman	78.90
Heavy Equipment Operator	55.58
ELECTRICIAN-NEON SIGN	
Electrician-Neon Sign	47.28
ELECTRICIAN-WIREMAN	**ADD ZONE RATE**
Wireman	52.65
Cable Splicer	56.56
Wireman-Foreman	56.56
Wireman-General Foreman	60.48
ELEVATOR CONSTRUCTOR	
Elevator Constructor-Journeyman Mechanic	87.91
Elevator Constructor-Mechanic in Charge	95.74
FENCE ERECTOR	**See Amendment 10**
Fence Erector	16.99
FLAGPERSON	**ADD LABORER ZONE RATE See Amendment 1**
Flagperson	29.24
FLOOR COVERER	
Floor Coverer-Journeyman	37.44
Floor Coverer-Foreman	40.22
GLAZIER	
Glazier	25.76
HIGHWAY STRIPER	**ADD LABORER ZONE RATE**
Highway Striper	35.36
HOD CARRIER-BRICK MASON TENDER	**ADD ZONE RATE**
Brick Mason-Journeyman	30.82
Brick Mason-Foreman	31.32

HOD CARRIER-PLASTER TENDER	**ADD ZONE RATE**
Plasterer Tender-Journeyman	35.36
Plasterer-Gun Tender	36.36
Plasterer Tender-Foreman	35.72

IRON WORKER	
Ironworker-Journeyman	60.30
Ironworker-Foreman	63.65
Ironworker-General Foreman	67.34

LABORER **SEE GROUP CLASSIFICATIONS**	**ADD ZONE RATE** See Amendment 1
Landscaper	26.95
Furniture Mover	28.25
Group 1	32.11
Group 1A	29.24
Group 2	32.21
Group 3	32.36
Group 4	32.61
Group 4A	33.86
Group 5	32.91
Group 6	
Nozzlemen, Rodmen	32.91
Gunmen, Materialmen	32.61
Reboundmen	32.36
Gunite Foremen	33.31

MECHANICAL INSULATOR	**ADD ZONE RATE**
Mechanical Insulator-Mechanic	58.21
Mechanical Insulator-Foreman	60.71
Mechanical Insulator-General Foreman	62.21

MILLWRIGHT	**ADD ZONE RATE**
Millwright	54.76

OPERATING ENGINEER SEE GROUP CLASSIFICATIONS	ADD ZONE RATE
Group 1	46.24
Group 1A	49.00
Group 2	49.53
Group 3	49.80
Group 4	50.54
Group 5	50.84
Group 6	51.01
Group 7	51.26
Group 8	51.85
Group 9	52.17
Group 10	52.52
Group 10A	52.71
Group 11	52.95
Group 11A	54.59
Group 11B	55.40
Foreman	54.59
Add 7% to base rate for "Second" Shift	
Add 12.5% to base rate for "Special" shift	

OPERATING ENGINEER-STEEL FABRICATOR & ERECTOR SEE GROUP CLASSIFICATIONS	ADD ZONE RATE
Group 1	61.54
Group 1 Truck Crane Oiler	55.37
Group 1 Oiler	53.20
Group 2	60.03
Group 2 Truck Crane Oiler	55.12
Group 2 Oiler	53.20
Group 3	58.79
Group 3 Truck Crane Oiler	54.90
Group 3 Oiler	52.98
Group 3 Hydraulic	54.57
Group 4	57.06

Group 5	55.96
Add 7% to base rate for "Second" Shift	
Add 12.5% to base rate for "Special" Shift	

OPERATING ENGINEER -PILEDRIVER SEE GROUP CLASSIFICATIONS	**ADD ZONE RATE**
Group 1	61.01
Group 1 Truck Crane Oiler	55.55
Group 1 Oiler	53.63
Group 2	59.47
Group 2 Truck Crane Oiler	55.37
Group 2 Oiler	53.43
Group 3	58.02
Group 3 Truck Crane Oiler	55.12
Group 3 Oiler	53.20
Group 4	56.51
Group 5	55.40
Group 6	54.29
Group 7	53.33
Group 8	52.37
Add 7% to base for "Second" Shift	
Add 12.5% to base for "Special" Shift	

PAINTER	
Brush/Roller Painter	33.49
Spray Painter/Paperhanger	34.34
Sandblaster	34.84
Structural Steel & Steeplejack	35.34
Swing Stage	36.34
Special Coating Application-Brush	34.84
Special Coating Application-Spray	35.34
Special Coating Application-Spray Steel	35.59
Foreman	$1.00 above highest Journeyman

PILEDRIVER	
Piledriver-Journeyman	53.96

Piledriver-Foreman	57.63
PLASTERER	**ADD ZONE RATE**
Plasterer-Journeyman	36.87
Plasterer-Foreman	39.12
PLUMBER/PIPEFITTER	
Plumber-Journeyman	47.10
Plumber-Foreman	50.19
Plumber-General Foreman	53.28
REFRIGERATION	
Refrigeration-Journeyman	43.68
ROOFER (Does not include sheet metal roofs)	
Roofer	22.61
SHEET METAL WORKER	**ADD ZONE RATE**
Sheet Metal-Journeyman	52.68
Sheet Metal-Foreman	55.55
Sheet Metal-General Foreman	58.42
SPRINKLER FITTER	
Sprinkler Fitter-Journeyman	35.00
Sprinkler Fitter-Foreman	35.00
Sprinkler Fitter-General Foreman	35.00
SURVEYOR	**ADD ZONE RATE**
Surveyor	49.80
TAPER	
Taper	38.98
TILE SETTER/TERRAZZO WORKER/MARBLE MASON-FINISHER	
Tile, Terrazzo and Marble Finisher	36.25

TILE SETTER/TERRAZZO WORKER/MARBLE MASON	**ADD ZONE RATE**	
Tile Setter-Journeyman	51.41	
Tile Setter-Foreman	53.41	
Tile Setter-General Foreman	61.41	
Terrazzo/Marble Mason-Journeyman	51.41	
Terrazzo/Marble Mason-Foreman	53.41	
Terrazzo/Marble Mason-General Foreman	61.41	
TRAFFIC BARRIER ERECTOR	**ADD LABORER ZONE RATE**	See Amendment 1
Traffic Barrier Erector	32.11	
TRUCK DRIVER		
Truck Driver	20.55	
WELL DRILLER		
Well Driller	40.80	
LUBRICATION AND SERVICE ENGINEER (MOBILE AND GREASE RACK)	**ADD OPERATING ENG. ZONE RATE**	
Lubrication and Service Engineer (mobile and grease rack)	51.01	
SOIL TESTER (CERTIFIED)		
Soil Tester (Certified)	40.11	
SOILS AND MATERIALS TESTER		
Soils and Materials Tester	40.11	

Job Descriptions for Recognized Classes of Workmen

Regarding job descriptions for public works projects, please take notice of the following:

1. Pursuant to NAC 338.0095(1)(a), "A workman employed on a public work must be paid based on the type of work that the workman actually performs on the public work and in accordance with the recognized class of the workman."
2. The work description for a particular class is not intended to be jurisdictional in scope nor to be construed as limiting or prohibiting any worker from performing the work of one or more classes.
3. Any person who believes that a type of work is not classified, or who otherwise needs clarification pertaining to the recognized classes or job descriptions, shall contact the Labor Commissioner, in writing, for a determination of the applicable classification and pay rate for a particular type of work.
4. The job descriptions set forth or referenced herein supersede any and all descriptions previously agreed upon by the Labor Commissioner in any settlement agreements or stipulations arising out of contested matters.
5. The following specific provisions, where applicable, shall prevail over any general provisions of the job descriptions:

    - Amendments to the prevailing wage determinations;
    - Group Classifications and/or descriptions recognized by the Labor Commissioner and included with wage determinations for a particular type of work in a particular county.

AIR BALANCE TECHNICIAN, includes but is not limited to:
Inspecting, testing, programming, documenting, adjusting and balancing heating, cooling and ventilating systems using specialized tools and testing equipment to attain performance standards specified in the design of the systems.

ALARM INSTALLER, includes but is not limited to:

1. Installing or testing electrical protective signaling systems used to provide notification of fire, burglary or other irregularities on the premises of the subscriber of the system;
2. Installing of wiring and signaling units;
3. Repairing electrical protective signaling systems
4. Starting up, programming and documenting systems;

BOILERMAKER, includes but is not limited to:

1. Constructing, assembling, maintaining and repairing stationary steam boilers and boiler house auxiliaries;
2. Aligning structures or plate sections to assemble boiler frame tanks or vats;

3. Assisting in the testing of assembled vessels, directing cleaning of boilers and boiler furnaces;
4. Inspecting and repairing boiler fittings, including, without limitation, safety valves, regulators, automatic-control mechanisms, water columns and auxiliary machines.

BRICKLAYER, includes but is not limited to:

1. Laying materials, including without limitation, brick, structural tile and blocks of concrete, cinder, glass, gypsum and terra cotta, but not including stone, to construct or repair walls, partitions, arches, sewers, and other structures;
2. Laying and aligning bricks, blocks or tiles to build or repair structures for high temperature equipment, including, without limitation, cupola, kilns, ovens and furnaces; and
3. Fastening or fusing brick or other building materials to structures with wire clamps, anchor holes, torches or cement.
4. Pointing-cleaning-caulking of all types of masonry; caulking of window frames encased in masonry on brick, stone or cement structures, including grinding and cutting out on such work and sand blasting, steam cleaning and gunite work.
5. Pointing, cleaning and weatherproofing of buildings, grain elevators and chimneys built of stone, brick or concrete, including grinding and cutting out, sand blasting and gunite work on the same.

CARPENTER, includes but is not limited to:

1. Laying out, constructing, erecting, fabricating, installing and repairing structures and fixtures of wood, plywood, or alternative materials, doors and hardware and the fastening of the same, inclusive of garage or overhead door openers, cabinets, framework, floors, and acoustical ceiling systems using carpenter's hand tools and power tools;
2. Installing or erecting metal studs, drywall, lathing, wall partitions, prefabricated EFIS panels or any other system of panels that is attached to the interior or exterior of any building or structure, insulation and all types of ceilings;
3. Pre-cast concrete and concrete form work which includes but is not limited to: setting of templates, layout, fabrication, constructing, placing, erection, rigging and hoisting, stripping and removing of all forms which are to be reused;
4. Plywood decking, including, without limitation, stacking and installation of the plywood and the plywood decking;
5. Cutting, setting, removing of beam sides and soffits, bracing, and pads;
6. Constructing all wood panel forms and frame wall;
7. Building, erecting and disassembling self-supporting scaffolds that are more than 14 feet in height;
8. Laying out, cutting, joining, fitting of Foam Architectural Elements if same are attached mechanically; and
9. Shaping, cutting and planing by any means if done by hand or machine.

CEMENT MASON, includes but is not limited to:

1. Smoothing and finishing surfaces of poured concrete floors, walls, sidewalks and curbs to specified textures;
2. Patching holes with fresh concrete or an epoxy compound;
3. Molding expansion joints and edges through the use of edging tools, jointers and straightedges;
4. Setting of curb and gutter forms one board high;

ELECTRONIC COMMUNICATION TECHNICIAN, includes but is not limited to:

1. Pulling cable, installing and trimming devices, terminating loops, circuits, or other data gathering points;
2. Termination of main control panels, racks, or other head end equipment, as well as testing of all circuits from the field devices to the main control panels and/or equipment;
3. Utilizing test equipment for the purpose of troubleshooting and verifying the integrity of the circuits in question;
4. Using hand tools to assemble and install data communication lines and equipment computer systems, antennas and towers;
5. Disassembling equipment to adjust, repair or replace parts using hand tools;
6. Starting up, programming and documenting systems;
7. Measuring, cutting, splicing, connecting, soldering and installing wire and cable associated with communication systems

ELECTRICIAN LINEMAN, includes but is not limited to:

1. Erecting and repairing wood poles and prefabricated light duty metal towers, cable and related equipment to construct overhead transmission and distribution power lines used to conduct electrical energy between generating stations, substations and consumers;
2. Directing and assisting electrician ground men in attaching cross arms, insulators, lightning arresters, switches, wire conductors and auxiliary equipment to poles and towers in preparation of erecting the poles or towers;
3. Climbing erected poles or towers and installing equipment such as transformers
4. Strings wire conductors between erected poles with assistance of ground helpers and adjusts slack in conductors to compensate for contraction and elongation of conductors due to temperature variations, using winch.

ELECTRICIAN GROUNDMAN, includes but is not limited to:

1. Working under the direct supervision of linemen, including the operation of jackhammers and man hauls;
2. Loading and unloading of materials and equipment used by electrician lineman.
3. Does not include climbing poles, towers or other structures or working in the proximity of energized lines or equipment;

ELECTRICIAN-NEON SIGN, includes but is not limited to:

1. Installing, servicing and repairing plastic, neon and illuminated signs;
2. Ascending ladders or operating hydraulic or electric hoist to install, service, or examine sign to determine cause of malfunction;

3. Wiring, rewiring or removing defective parts and installing new parts using electrician's tools;
4. Removing sign or part of sign for repairs, such as structural fabrication, scroll repair, or transformer repair;

ELECTRICIAN WIREMAN, includes but is not limited to:

1. Laying out plans, installing, testing and repairing wiring, electrical fixtures, apparatus and control equipment;
2. Measuring, cutting, bending, threading, assembling and installing electrical conduit by using tools including, without limitation, a hacksaw, pipe threader, or conduit bender;
3. Pulling wiring through conduit;
4. Splicing wires;
5. Connecting wiring to lighting fixtures and power equipment;
6. Installing control and distribution apparatus, including, without limitation, switches, relays and circuit breakers, and fastening such apparatus into place;
7. Connecting power cables to equipment, including, without limitation, electric ranges and motors, and installing grounding leads;
8. Testing the continuity of a circuit to ensure electrical compatibility and safety of components using testing instruments, including, without limitation, an ohmmeter, a battery and buzzer, and an oscilloscope;
9. As necessary, cutting and welding steel structural members;

ELEVATOR CONSTRUCTOR, includes but is not limited to:

1. Assembling, installing, repairing and maintaining electric and hydraulic freight and passenger elevators, escalators and dumbwaiters;
2. Cutting pre-fabricated sections of framework, rails and other elevator components to specified dimensions, using acetylene torch, power saw, and disc grinder;
3. Installing cables, counterweights, pumps, motor foundations, escalator drives, guide rails, elevator cars, and control panels, using hand tools;

FENCE ERECTOR, includes but is not limited to:

1. Erecting or repairing chain link, wooden, tortoise, wire/wire mesh, or temporary fencing;
2. Mixing and pouring concrete around bases of posts and tamping soil into post hole to embed post;
3. Digging post holes with a spade, post hole digger or power driven auger;
4. Aligning posts through the use of lines or by sighting;
5. Verifying vertical alignment of posts with a plumb bob or spirit level;

FLAG PERSON, includes but is not limited to:

1. Directing movement of vehicular traffic through construction projects;
2. Distributing traffic control signs and markers along site in designated pattern;
3. Informing drivers of detour routes through construction sites;

FLOOR COVERER, includes but is not limited to:

1. Applying blocks, strips or sheets of shock-absorbing, sound-deadening or decorative covering to floors and walls, including carpets or rugs;
2. Measuring and cutting covering materials, such as rubber, linoleum, astro-turf, or cork tile and foundation material such as felt, using rule, straightedge, linoleum knife and snips;
3. Spreading adhesive cement over floor to cement foundation material to floor for sound-deadening, and to prevent covering from wearing at the board joints;
4. Rolling finished floors to smooth the floor and press cement into base and covering;
5. Fitting of devices for the attachment of carpet, linoleum, rubber and all resilient floor coverings and the fitting of metal edges, corners and caps used in the installation of the foregoing materials and all other preparatory work;

GLAZIER, includes but is not limited to:

1. Installing, setting, cutting, preparing, or removal of glass, or materials used in lieu thereof, including, without limitation, in windows, doorways, showers, bathtubs, skylights and display cases;
2. Installing glass on surfaces, including, without limitation, fronts of buildings, interior walls and ceilings;
3. Installing pre-assembled framework for windows and doors designed to be fitted with glass panels, including stained glass windows by using hand tools;
4. Loading and arranging of glass on trucks at the site of the public work;

HIGHWAY STRIPER, includes but is not limited to:

1. Painting highways, streets and parking surfaces by using manually propelled or mechanically propelled machines, brushes, rollers or spray guns;
2. Installing any device or application of any material used in lieu of paint for traffic direction, including, without limitation, buttons, tapes, plastics, rumble bars and other similar materials;

HOD CARRIER-BRICK MASON TENDER, includes but is not limited to:

1. Tending to or assisting brick masons, bricklayers and stonemasons;
2. Mixing, packing, wheeling and tempering mortar and fire clay;
3. Mixing, supplying and holding materials or tools;
4. Mixing, handling and conveying all other materials used by brick masons, bricklayers and stone masons;
5. Building scaffolds, trestles, boxes and swinging staging used exclusively by bricklayers and stone masons;
6. Hanging cables and placing putlogs;
7. Carrying bricks and mortar in a hod;
8. Cleaning work area and equipment of bricklayers and stone masons

HOD CARRIER-PLASTERER TENDER, includes but is not limited to:

1. Serving Plasterers in any capacity;
2. Handling materials after the materials are delivered as used by a Plasterer;
3. Building and handling all necessary trestle, scaffolding and planking of scaffolding for the exclusive use of Plasterers;
4. Building mortar boxes, mortar boards and stands.

IRONWORKER, includes but is not limited to:

1. Performing duties, as part of a crew, to raise, place and unite girders, columns and other structural steel members to form completed structures or structure frameworks;
2. Setting up hoisting equipment for raising and placing structural steel members;
3. Fastening steel members to cable of hoist, using chains, cable or rope;
4. Forcing steel members into final position using turnbuckles, crowbars, jacks, hand tools;
5. Aligning rivet holes in steel members with corresponding holes in previously placed steel members by driving drift pins to handle of wrench through holes;
6. Bolting aligned steel members to keep them in position until the steel members can be permanently riveted, bolted or welded into place;
7. Cutting and welding steel members;
8. Installing and repairing gates, iron doors, flagpoles, iron fences and roof decking;
9. Installing corrugated sheets when attached to steel frames;
10. Stud welding of all iron, steel and metal to structural steel;
11. Handling and setting of steel and metal joists;
12. Loading, unloading, hoisting, handling, signaling, placing and erecting of pre-stressed and pre-cast materials;
13. Handling, racking, sorting, cutting, bending, hoisting, placing, burning, welding and tying all material used to reinforce concrete construction;

LABORER, includes but is not limited to:

Perform tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites. May operate hand and power tools of all types: air hammers, earth tampers, cement mixers, small mechanical hoists, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, clean up rubble and debris, and remove asbestos, lead, and other hazardous waste materials. May assist other craft workers.

MARBLE MASON, includes but is not limited to:

1. Cutting, tooling, and setting marble slabs in floors and walls of buildings and renovating and polishing marble slabs previously set in buildings;
2. Trimming, facing and cutting marble to a specific size using a power saw, cutting and facing equipment, and hand tools
3. Drilling holes in marble slabs and attaching brackets;
4. Spreading mortar on the bottom and sides of a marble slab and on the side of adjacent marble slabs;
5. Setting blocks in positions, tamping a marble slab into place and anchoring bracket attachments with wire;

6. Filling joints between marble slabs with grout and removing excess grout with a sponge;
7. Cleaning and beveling cracks and chips on marble slabs using hand tools and power tools;
8. Heating cracked or chipped areas of a marble slab with a blowtorch and filling the defect with a composition mastic that matches the grain of the marble slab; and
9. Polishing marble slabs and other ornamental stone to a high luster by using hand tools and power tools.

MECHANICAL INSULATOR, includes but is not limited to:

1. Covering and lining structures with cork, canvas, tar paper, magnesia and related materials;
2. Installing blown-on insulation on pipe and machinery;
3. Lining of mechanical room surfaces and air handling shafts;
4. Filling and damming of fire stops and penetrations including, but not limited to, electrical and mechanical systems;
5. Foam applications for the purpose of thermal, acoustical, or fire protective purposes, including RTV foams or equivalents, applied to mechanical or electrical systems;
6. Duct lining and duct wrapping, direct application and installation of fire protection of grease ducts, exhaust systems, or any other ductwork for acoustical or thermal purposes;
7. Insulation of field joints on pre-insulated underground piping and the pouring of Gilsilite or its equivalent;
8. The application of material, including metal and PVC jacketing, on piping, fittings, valves, flanges, boilers, ducts, plenums, flues, tanks, vats, equipment and any other hot or cold surface for the purpose of thermal control;

MILLWRIGHT, includes but is not limited to:

1. Installing machinery and equipment according to layout plans, blueprints and other drawings in industrial establishments by using hoists, lift trucks, hand tools and power tools;
2. Dismantling machines by using hammers, wrenches, crowbars and other hand tools;
3. Assembling and installing equipment, including, without limitation, shafting, conveyors, monorails and tram rails, by using hand tools and power tools;
4. Constructing foundations for machines by using hand tools and building materials, including, without limitation, wood, cement and steel;
5. Assembling machines and bolting, welding, riveting or otherwise fastening them to a foundation or other structure by using hand tools and power tools; and
6. Repairing and lubricating machines and equipment (at the site of the public work) assembled and used by millwrights.

OPERATING ENGINEER, includes but is not limited to:

Operate one or several types of power construction equipment, such as motor graders, bulldozers, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders to excavate, move, and grade earth, erect structures, or pour concrete or other hard surface pavement.

PAINTER, includes but is not limited to:

1. All painting of walls, equipment, buildings, bridges and other structural surfaces by using brushes, rollers and spray guns;
2. Application of wall coverings/wall paper;
3. Removing old paint to prepare surfaces before painting the surface;
4. Mixing colors or oils to obtain desired color or consistency;
5. Sanding surfaces between coats and polishing final coat to a specified finish;
6. Cutting stencils and brushing and spraying lettering and decorations on surfaces;
7. Washing and treating surfaces with oil, turpentine, mildew remover or other preparations;
8. Filling cracks, holes and joints with caulk, putty, plaster or other filler by using caulking gun or putty knife;

PILEDRIVER, includes but is not limited to:

1. Operating pile drivers mounted on skids, barge, crawler, treads or locomotive crane to drive piling as foundations for structures including, without limitation, buildings, bridges and piers;
2. Barking, shoeing, splicing, form building, heading, centering, placing, driving, staying, framing, fastening, automatic pile threading, pulling and/or cutting off of piling;
3. Fabricating, forming, handling and setting of all such pre-cast, pre-stressed and post-stressed shapes that are an integral part of docks, piers, wharves, bulkheads, jetties, and similar structures;

PIPEFITTER, includes but is not limited to:

Assembling, installing, modifying and maintaining pipe systems, pipe supports and pneumatic equipment and related machines and equipment components for steam, hot water, heating, cooling, lubricating, sprinkling and industrial and processing systems which may require:

a. Cutting, threading and hammering pipe to specifications using tools, including, without limitation, saws, cutting torches and pipe threaders and benders;
b. Attaching pipes to walls, structures and fixtures, including without limitation, radiators or tanks, using brackets, clamps, tools, or welding equipment;
c. Coating non-ferrous piping materials by dipping in mixture of molten tin and lead to prevent erosion, or galvanic and electrolytic action;

PLASTERER, includes but is not limited to:

1. Applying coats of plaster onto interior or exterior walls, ceilings, or partitions of buildings to produce a finished surface according to blueprints, architects' drawings and oral instruction;
2. Creating decorative textures in finish coat by using sand, pebbles or stones;
3. Installing guide wires on exterior surfaces of buildings to indicate thickness of plaster or stucco;
4. Applying weatherproof, decorative covering to exterior surfaces of a building;
5. Molding and installing ornamental plaster pieces, panels and trim;

6. Directing workers to mix plaster to a desired consistency;
7. Assembly of EFIS panels;
8. Laying out, cutting, joining, fitting and installation of Architectural Foam Elements which are trowel applied or adhesive set;
9. Applying, shaping, cutting, and planing in preparation for netting done by hand or machine;
10. All plaster or synthetic finishes applied to Foam Architectural Elements

PLUMBER, includes but is not limited to:

Assembling, installing and repairing pipes, fittings and fixtures for heating, water and drainage systems inside of buildings and to a point 5 feet outside of buildings which may therein require:

a. Repairing and maintaining plumbing by replacing defective washers, repairing or mending broken pipes, and opening clogged drains;
b. Assembling pipe sections, tubing and fittings by using screws, bolts, solder, plastic solvent and caulking;
c. Installing pipe assemblies, fittings, valves and fixtures, including, without limitation, sinks, toilets and tubs, by using hand tools and power tools;
d. Cutting openings in structures, excluding concrete, to accommodate pipe and pipe fittings by using hand tools and power tools;
e. Filling pipes and plumbing fixtures with water or air and observing pressure gauges to detect and locate leaks.

REFRIGERATION MECHANIC, includes but is not limited to:

1. Installing and repairing industrial and commercial refrigeration systems;
2. Mounting compressors, condensers and other refrigeration components to the frame of a refrigerator by using hand tools and acetylene welding equipment;
3. Assembling structural and functional components needed for refrigeration, including, without limitation, controls, switches, gauges, wiring harnesses, valves, pumps, compressors, condensers, cores and pipes;
4. Installing expansion and control valves by using hand tools and acetylene welding equipment;
5. Cutting, bending, threading and connecting pipe from functional components to water, power or refrigeration systems;
6. Fabricating and assembling components and structural portions of a refrigeration system;

ROOFER, includes but is not limited to:

1. Installing and covering roofs and structures with slate, asphalt, wood and other related materials, other than sheet metal, by using brushes, knives, punches, hammers and other tools;
2. Spraying roofs, sidings and walls with material to bind, seal, insulate or soundproof sections of a structure;
3. Installation of all plastic, slate, slag, gravel, asphalt and composition roofing, and rock asphalt mastic when used for damp and waterproofing;

4. Installation of all damp resisting preparations when applied on roofs with mop, three-knot brush, roller, swab or spray system;
5. All types of preformed panels used in waterproofing;
6. Handling, hoisting and storing of all roofing, damp and waterproofing materials;
7. The tear-off and/or removal of roofing and roofing materials;

SHEET METAL WORKER, includes but is not limited to:

1. Fabricating, assembling, dismantling, installing or repairing:
    - Sheet metal roofs, including #30 felt roofing paper installed to form a metal roofing system;
    - Sheet metal parts or equipment, including, without limitation, duct work, metal lockers and kitchen equipment;
    - Air-veyor and air-handling systems, regardless of materials used;
2. Setting up and operating fabrication machines to cut, bend and straighten sheet metal;
3. Shaping metal over anvils, blocks or forms using a hammer;
4. Operating soldering and welding equipment to join sheet metal parts;
5. Inspecting, assembling and smoothing seams and joints of burred surfaces;
6. Welding, soldering, bolting, riveting, screwing, clipping, caulking or bonding component parts to assemble products by using hand tools, power tools and devices for lifting and handling;

SPRINKLER FITTER, includes but is not limited to:

Installing, dismantling, maintaining, repairing, adjusting and correcting all fire protection and fire control systems, including the installation of piping or tubing, appurtenances and equipment pertaining thereto, including both overhead and underground water mains, fire hydrants, and hydrant mains, standpipes and hose connection to sprinkler systems, sprinkler tank heaters, air lines and thermal systems used in connection with sprinkler and alarm systems.

SURVEYOR, includes but is not limited to:

1. Planning ground surveys designed to establish base lines, elevation and other geodetic measurements;
2. Compiling data relevant to the shape, contour, gravitation, location, elevation and dimension of land and land features on or near the surface of the Earth for engineering, map making, mining, land evaluation, construction and other purposes;
3. Surveying bodies of water to determine navigable channels and to secure data for construction of breakwaters, piers and other marine structures;
4. Computing data necessary for driving and connecting underground passages, underground storage and volume of underground deposits.

TAPER, includes but is not limited to:

1. Sealing joints between plasterboard or other wallboards to prepare a wall surface for painting or papering;
2. Mixing sealing compound by hand or with a portable electric mixer and spreading the compound over the joints between boards using a trowel, broad knife, or spatula;

3. Filling cracks and holes in walls and ceilings with sealing compound ;
4. Applying texturing compound and primer to walls and ceiling to prepare a surface for a final finish by using brushes, rollers and spray guns;
5. Coating of joint compound or taping mud;

TERRAZZO WORKER, includes but is not limited to:

1. Applying cement, sand, pigment and marble chips to floors and stairways to attain durable and decorative surfacing according to specifications or drawings;
2. Spreading mixtures of sand, cement and water over surface with a trowel to form terrazzo;
3. Cutting metal division strips and pressing the metal division strips into a terrazzo base so that top edges form a desired design or pattern and define level of finished floor surface;
4. Spreading mixtures of marble chips, cement, pigment and water over a terrazzo base to form a finished surface by using a float and trowel;
5. Pre-casting terrazzo blocks in wooden forms

TILE SETTER, includes but is not limited to:

1. Applying tile and materials made for tile in tile-like units to walls, floors, ceilings and promenade roof decks following design specification;
2. Applying glazed, unglazed, mosaic and other ceramic tiles, which are used as a surface on floors, walls, ceilings, and other surfaces and which must be set to specific grade;
3. Applying and floating all setting beds into which glazed, unglazed, mosaic, or other ceramic tiles are set;
4. Leveling and plumbing tiles to a specified grade

TILE, TERRAZZO AND MARBLE FINISHER, includes but is not limited to:

1. Supplying and mixing construction materials for a tile setter, terrazzo worker or marble setter;
2. Applying grout and finishing the surface of installed tile, terrazzo and marble;
3. Cleaning installed tile, terrazzo and tile surfaces;
4. Renovation and filling chipped, cracked and broken pieces of tile, terrazzo and marble;
5. Grinding and polishing tile, terrazzo and marble;
6. Assisting a tile setter, terrazzo worker or marble setter;

TRAFFIC BARRIER ERECTOR, includes but is not limited to:

Erects or places instruments to provide directional assistance to traffic on or near the public works construction project.

TRUCK DRIVER, includes but is not limited to:

Driving a tractor trailer combination or a truck to transport goods or materials at the site of a public work or between sites of a public work. (Also, see descriptions listed with Truck Driver rates, if any.)

WELL DRILLER, includes but is not limited to:

1. Setting, operating or tending to portable drilling rig machinery and related equipment to drill wells;
2. Extending stabilizing jackscrews to support and level a drilling rig;
3. Installing water well pumps;
4. Drillings wells for industrial water supplies, irrigation water supplies or water supplies for any other purpose; dewatering or other similar purposes; exploration; hole drilling for geologic and hydrologic information; and core drilling for geologic information.

GROUP CLASSIFICATIONS

LABORER, includes but is not limited to:

Group 1
All cleanup work of debris, grounds, and building including windows and tile

Dumpmen or Spotter (other than asphalt)
Handling and Servicing of Flares, Watchmen
General Laborer
Guide Posts and Highway Signs
Guardrail Erection and Dismantling
Limber, Brushloader and Piler
Pavement Marking and Highway Striping
Traffic Control Supervisor

Group 2
Choker setter or Rigger (clearing work only) Pittsburgh
Chipper and similar type brush shredders
Concrete worker (wet or dry) all concrete work not listed in Group 3
Crusher or Grizzly Tender
Greasing Dowels
Guinea Chaser (Stakemen)
Panel Forms (wood or metal) handling, cleaning and stripping of Loading and unloading,
(Carrying and handling of all rods and material for use in reinforcing concrete
Railroad Trackmen (maintenance, repair or builders)
Sloper
Semi-Skilled Wrecker (salvaging of building materials other than those listed in Group 3)

Group 3
Asphalt Workers (Ironers, Shovelers, Cutting Machine)
Buggymobile
Chainsaw, Faller, Logloader and Bucker
Compactor (all types)
Concrete Mixer under 1/2 yard
Concrete Pan Work (Breadpan type), handling, cleaning\stripping
Concrete Saw, Chipping, Grinding, Sanding, Vibrator
Cribbing, Shoring, Lagging, Trench Jacking, Hand-Guided Lagging Hammer
Curbing or Divider machine
Curb Setter (precast or cut)
Ditching Machine (hand-guided)
Drillers Helper, Chuck Tender
Form Raiser, Slip Forms
Grouting of Concrete Walls, Windows and Door Jams
Headerboardmen
Jackhammer, Pavement Breaker, Air Spade

Mastic Worker (wet or dry)
Pipewrapper, Kettlemen, Potmen, and men applying asphalt, creosote and similar type materials
All Power Tools (air, gas, or electric), Post Driver
Riprap-Stonepaver and RockSlinger, including placing of sack concrete wet or dry
Rototiller
Rigging and Signaling in connection with Laborers' work
Sandblaster, Potmen, Gunmen or Nozzlemen
Vibra-screed
Skilled Wrecker (removing and salvaging of sash, windows, doors, plumbing and electrical fixtures)

Group 4
Burning and Welding in connection with Laborers' work
Joy Drill Model TWM-2A, Gardner Denver Model DN143 and similar type drills (in accordance with Memorandum of Understanding between Laborers and Operating Engineers dated at Miami, Florida, Feb. 3, 1954) and Track Drillers, Diamond Core Drillers, Wagon Drillers, Mechanical Drillers on Multiple Units
High scalers
Concrete pump operator
Heavy Duty Vibrator with Stinger 5" diameter or over
Pipelayer, Caulker and Bander
Pipelayer-waterline, Sewerline, Gasoline, Conduit
Cleaning of Utility Lines
Slip Lining of Utility Lines (including operation of Equipment)
TV Monitoring and Grouting of Utility Lines
Asphalt Rakers

Group 4A

Foreman

Group 5
Construction Specialists
Blasters and Powdermen, all work of loading, placing, and blasting of all powder and explosives of any type, regardless of method used for such loading and placing
Asbestos removal
Lead abatement
Hazardous waste
Material removal

Group 6
Gunite Foremen, Nozzlemen, Rodmen, Gunmen, Materialmen, Reboundmen

OPERATING ENGINEER, includes but is not limited to:

Group 1
Engineer Assistant

Group 1A
Heavy Duty Repairman Helper
Oiler
Parts man

Group 2
Compressor Operator
Material Loader and/or Conveyor Operator (handling building materials)
Pump Operator

Group 3
Bobcat or similar loader, 1/4 cu. yd. or less
Concrete Curing Machines (streets, highways, airports, canals)
Conveyor Belt Operator (tunnel)
Forklift (under 20)
Engineer Generating Plant (500 K.W.)
Mixer Box Operator (concrete plant)
Motorman
Rotomist Operator
Oiler (truck crane)

Group 4
Concrete Mixer Operator, Skip type
Dinky Operator
Forklift (20' or over) or Lumber Stacker
Ross Carrier
Skip Loader Operator (under one (1) cu. yd.)
Tie Spacer

Group 5
Concrete Mixers (over one (1) cu. yd.)
Concrete Pumps or Pumpcrete Guns
Elevator and Material Hoist (one (1) drum)
Groundman for Asphalt Milling and similar

Group 6
Auger type drilling equipment up to and including 30 ft. depth digging capacity m.r.c.
Boom Truck or Dual Purpose a-Frame Truck
B.L.H. Lima Road Pactor or similar
Chip Box Spreader (Flaherty type or similar)
Concrete Batch Plant (wet or dry)
Concrete Saws (highways, streets, airports, canals)
Locomotives (over thirty (30) tons)
Maginnis International Full Slab Vibrator (airports, highways, canals and warehouses)
Mechanical Finishers (concrete) (Clary, Johnson, Bidwell Bridge Deck or similar types)
Mechanical Burn, Curb and/or Curb and Gutter Machine (concrete or asphalt)
Pavement Breaker, Truck Mounted, with compressor combination
Pavement Breaker or Tamper (with or without compressor combination)

Power Jumbo Operator (setting slip-forms, etc., in tunnels)
Roller Operator (except asphalt)
Self-Propelled Tape Machine
Self-Propelled Compactor (single engine)
Self-Propelled Power Sweeper Operator
Slip-Form Pump (power-driven by hydraulic, electric, air, gas, etc. lifting device for concrete forms)
Small Rubber-Tired Tractors
Snooper Crane, Paxton-Mitchell or similar
Stationary Pipe Wrapping, Cleaning and Bending Machine Operator

Group 7
Auger type drilling equipment over 30 ft. depth digging capacity m.r.c.
Compressor (over 2)
Concrete Conveyor or Concrete Pump, truck or equipment mounted (any assistance required shall be performed by an Assistant to Engineer) Boom length to apply
Concrete Conveyor, Building Site
Drilling and Boring Machine, vertical and horizontal (not to apply to waterliners, wagon drills or jack hammers)
Crusher Plant Engineer
Generators
Kolman Loader
Material Hoist (two (2) or more drums)
Mechanical Finishers or Spreader Machine (asphalt, Barber-Greene or similar)
Mine or Shaft Hoist
Pipe Bending Machines (pipeline only)
Pipe Cleaning Machines (tractor-propelled and supported)
Pipe Wrapping Machines (tractor-propelled and supported)
Portable Crushing and Screening Plants
Post Driller And/Or Driver
Pumps (over 2)
Roller Operator (asphalt)
Screedman (except asphaltic or concrete paving)
Screedman (Barber-Greene and similar) (asphaltic or concrete paving)
Self-Propelled Boom-Type Lifting Device (center mount) (on ten (10) ton capacity or less)
Slusher Operator
Surface Heater and Planer Operator
Trenching Machine (maximum digging capacity three (3) ft. depth) (Any assistance in the operation, if needed, shall be performed by an Assistant to Engineer)
Truck-Type Loader
Welding Machines (gasoline or diesel)

Group 8
Asphalt Plant Engineer
Asphalt Milling Machine
Cast-In-Place Pipe-Laying Machine
Combination Slusher and Motor Operator
Concrete Batch Plant (multiple units)

Dozer Operator
Drill Doctor
Elevating Grader Operator
Grooving and Grinding Machine (highways)
Ken Seal Operator
Loader (up to and including two and one-half (2 1/2) cu. yds)
Mechanical Trench Shield
Mixermobile
Push Cats
Road Oil Mixing Machine Operator Wood-Mixer (and other similar Pugmill equipment)
Rubber-Tired Earthmoving Equipment (up to and including thirty-five (35) cu. yds. "struck " m.r.c., Euclids, T-Pulls, DW10, 20, 21 and similar)
Self-Propelled Compactors with Dozer; Hyster 450, Cat 825 or similar
Sheepfoot
Small Tractor (with boom)
Soil Stabilizer (P & H or equal)
Timber Skidder (rubber-tired) or similar equipment
Tractor-Drawn Scraper
Tractor Operator
Tractor-Mounted Compressor Drill Combination
Trenching Machine Operator (over three (3) feet depth)
Tri-Batch Paver
Tunnel Badger or Tunnel Boring Machine Operator
Tunnel Mole Boring Machine
Vermeer T-600b Rock Cutter

Group 9
Chicago Boom
Combination Backhoe and Loader (up to and including 3/8 cu. yd.)
Combination Mixer and Compressor (gunite)
Heavy Duty Repairman and/or Welder
Lull Hi-Lift (twenty (20) feet or over)
Mucking Machine
Sub-Grader (Gurries or other types)
Tractor (with Boom) (D6 or larger)
Track-Laying-Type Earthmoving Machine (single engine with tandem scrapers)

Group 10
Boom-Type Backfilling Machine
Bridge Crane
Cary-Lift or similar
Chemical Grouting Machine
Derricks (two (2) Group 10 Operators required when swing engine remote from hoist)
Derrick Barges (except excavation work)
Euclid Loader and similar types
Gradesetter, Grade Checker
Heavy Duty Rotary Drill Rigs

Lift-Slab (Vagtborg and similar types)
Loader (over two and one-half (2 1/2 cu. yds. up to and including four (4) cu. yds.)
Locomotive (over one hundred (100) tons, single or multiple units)
Multiple-Engine Earthmoving Machines (Euclid Dozers, etc.)
Pre-Stress Wire Wrapping Machine
Rubber-Tired Scraper, Self-Loading
Single-Engine Scraper (over thirty-five (35) cu. yds.)
Shuttle Car (Reclaim Station)
Train Loading Station
Trenching Machine multi-engine with sloping attachments (Jefco or similar)
Vacuum Cooling Plant
Whirley Crane (up to and including twenty-five (25) tons)

Group 10A
Backhoe-Hydraulic (up to and including one (1) cu. yd.)
Backhoe (up to and including one (1) cu. yd.) (Cable)
CMI Dual Lane Auto-Grader SP30 or similar type
Cranes (not over twenty-five (25) tons) (hammerhead and gantry)
Finish Blade
Gradalls (up to and including one (1) cu. yd.)
Motor Patrol Operator
Power Shovels, Clamshells, Draglines, Cranes (up to and including one (1) cu. yd.)
Rubber-Tired Scraper, Self-Loading (twin engine)
Self-Propelled Boom-Type Lifting Device, center mount (over 10 tons up to and including 25 tons)

Group 11
Automatic Asphalt or Concrete Slip-Form Paver
Automatic Railroad Car Dumper
Canal Trimmer
Cary Lift, Campbell or similar type
Cranes (over twenty-five (25) tons)
Euclid Loader when controlled from the Pullcat
Highline Cableway Operator
Loader (over four (4) cu. yds. up to and including twelve (12) cu. yds.)
Multi-Engine Earthmoving Equipment (up to and including seventy-five (75) cu. yds. struck m.r.c.)
Multi-Engine Scrapers (when used to Push Pull)
Power Shovels, Clamshells, Draglines, Backhoes Gradalls (over one (1) cu. yd. and up to and including seven (7) cu. yds. m.r.c.)
Self-Propelled Boom-Type Lifting Device (center mount) (over 25 tons m.r.c.)
Self-Propelled Compactor (with multiple-propulsion power units)
Single-Engine Rubber-Tired Earthmoving Machine, with Tandem Scraper
Slip-Form Paver (concrete or asphalt)
Tandem Cats and Scraper
Tower Crane Mobile (including Rail Mount)
Truck Mounted Hydraulic Crane when remote control equipped (over 10 tons up to and including 25 tons)

Universal Liebher and Tower Cranes (and similar types)
Wheel Excavator (up to and including seven hundred fifty (750) cu. yds. per hour)
Whirley Cranes (over twenty-five (25) tons)

Group 11A
Band Wagons (in conjunction with Wheel Excavators)
Operator of Helicopter)when used in construction work)
Loader (over twelve (12) cu. yds.)
Multi-Engine Earthmoving Equipment (over seventy-five (75) cu. yds. "struck" m.r.c.)
Power Shovels. Clamshells, Draglines, Backhoes, and Gradalls (over seven 7 cu. yds. m.r.c.)
Remote-Controlled Earth Moving Equipment
Wheel Excavator (over seven hundred fifty (750) cu. yds. per hour)

Group 11B
Holland Loader or similar or Loader (over 18 cu. yds.)

OPERATING ENGINEERS - Steel Fabricator & Erector

Group 1
Cranes over 100 tons
Derrick over 100 tons
Self-Propelled Boom Type Lifting Devices over 100 tons

Group 2
Cranes over 45 tons up to and including 100 tons
Derrick, 100 tons and under
Self Propelled Boom Type Lifting Device, over 45 tons
Tower Crane

Group 3
Cranes, 45 tons and under
Self Propelled Boom Type Lifting Device, 45 tons and under

Group 4
Chicago Boom
Forklift, 10 tons and over
Heavy Duty Repairman/Welder

Group 5
Boom Cat

OPERATING ENGINEER -Piledriver

Group 1
Derrick Barge Pedestal mounted over 100 tons
Clamshells over 7 cu. yds.
Self Propelled Boom Type Lifting Device, over 100 tons
Truck Crane or Crawler, land or barge mounted over 100 tons

Group 2
Derrick Barge Pedestal mounted 45 tons up to and including 100 tons
Clamshells up to and including 7 cu. yds.
Self Propelled Boom Type Lifting Device over 45 tons
Truck Crane or Crawler, land or barge mounted, over 45 tons up to and including 100 tons

Group 3
Derrick Barge Pedestal mounted under 45 tons
Self Propelled Boom Type Lifting Device 45 tons and under
Skid/Scow Piledriver, any tonnage
Truck Crane or Crawler, land or barge mounted 45 tons and under

Group 4
Assistant Operator in lieu of Assistant to Engineer
Forklift, 10 tons and over
Heavy Duty Repairman/Welder

Group 5
No current classification

Group 6
Deck Engineer

Group 7
No current classification

Group 8
Deckhand
Fireman

ZONE RATES

BRICKLAYER
In addition to BRICKLAYER rates add the applicable amounts per hour, calculated based on a radius of over fifty (50) miles from the Washoe County Courthouse in Reno, Nevada:

Zone 1-0-35 Miles	0.00
Zone 2-36-75 Miles	1.25
Zone 3-Over 75 Miles	5.37

CARPENTER (Building and Heavy Highway and Dam Construction)
In addition to CARPENTER rates add the applicable amounts per hour, calculated from the Washoe County Courthouse:

Zone 1-0 to 50 miles	$0.00 (road miles of either the Carson City Courthouse or the Washoe County Courthouse)
Zone 2-51-150 miles	$3.00
Zone 3-151-300 miles	$4.00
Zone 4-301 miles and over	$5.00

CEMENT MASON
In addition to CEMENT MASON rates add the applicable amounts per hour, calculated from the Reno Post Office, 50 So. Virginia St., Reno, Nevada:

Zone 1-0-90 miles	$0.00
Zone 2-91 miles and over	$6.00

ELECTRICIAN
In addition to Electrician rates add the applicable amounts per hour, calculated from the Washoe County Courthouse:

Zone 1-0-70 miles	$0.00
Zone 2-71-90 miles	$8.00
Zone 3 -91 miles and over	$10.00

ELECTRICIAN-COMMUNICATION TECH
In addition to Electrician Communication Tech rates add the applicable amounts per hour, calculated from the Washoe County Courthouse:

Zone 1-0-70 miles	$0.00
Zone 2-71-90 miles	$5.00
Zone 3 -91 miles and over	$7.00

HOD CARRIER-BRICK MASON TENDER
In addition to Hod Carrier Brick Mason Tender rates, add the applicable amounts per hour, calculated based on a radius from the Washoe County Courthouse:

Zone 1-35 to 75 miles	$1.25
Zone 2-76 miles and over	$7.50

HOD CARRIER-PLASTERER
In addition to Hod Carrier Plasterer rates add the applicable amounts per hour, calculated based on a radius from So. Virginia St., Reno, Nevada:

Zone 1-70 miles	$0.00

Zone 70 miles and over $8.00

LABORER (Highway and Dam Construction only)
In addition to LABORER rates add the applicable amounts per hour, calculated based on a radius from either the Carson City Courthouse or the Washoe County Courthouse:

Zone 1-0 to 50 miles $0.00
Zone 2-51 to 150 miles $3.00
Zone 3-151 to 300 miles $4.00
Zone 4-301 miles and over $5.00

LABORER (Building Construction)
In addition to LABORER rates add the applicable amounts per hour, calculated based on road miles from either the Carson City Courthouse or the Washoe County Courthouse:

Zone 1-0 to 50 miles $0.00
Zone 2-51 to 150 miles $3.00
Zone 3-151 to 300 miles $4.00
Zone 4-301 miles and over $5.00

MECHANICAL INSULATOR
In addition to MECHANICAL INSULATOR rates add the applicable amounts per hour, calculated based on a radius figured from Reno City Hall:
Zone 1-0-20 miles- $1.25
Zone 2-21-40 miles- $2.50
Over 40 miles- $10.63

MILLWRIGHT
In addition to MILLWRIGHT rates, add the applicable amounts per hour, calculated on road miles from either the Carson City Courthouse or the Washoe County Courthouse:
Zone 1-1 to 15 miles $1.25
Zone 2-15 to 35 miles $2.50
Zone 3-35 miles and over $10.63

OPERATING ENGINEER
In addition to: OPERATING ENGINEER; STEEL FABRICATOR and ERECTOR, PILEDRIVER, SURVEYOR, and LUBRICATION AND SERVICE ENGINEER rates add the applicable amounts per hour calculated based on a radius from the Washoe County Courthouse:

Zone 1-0 to 75 miles $0.00
Zone 2-75 to 150 miles $3.00
Zone 3-151 to 300 miles $4.00
Zone 4-301 miles and over $5.00

PLASTERER

In addition to PLASTERER rates add the applicable amounts per hour, calculated from the South Virginia and Mill Street, Reno, Nevada:

Zone 1-0-70 miles	$0.00
Zone 2-70 miles and over	$8.00

SHEET METAL WORKER

In addition to AIR BALANCE AND SHEET METAL WORKER rates, add the applicable amounts per hour, calculated based on a radius from the courthouse in Reno, Nevada:

Zone 1-0 to 75 miles	$0.00
(including the City of Fallon and the Fallon Naval Air Base)	
Zone 2-over 75 miles	$8.12

TILE/TERRAZZO WORKER/MARBLE MASON

In addition to TILE/TERRAZZO WORKER/MARBLE MASON rates add the applicable amounts per hour, calculated based on a radius of over fifty (50) miles from the City Hall of Las Vegas, Nevada:

0-40 Miles	$0.00
41-50 Miles	$2.50
51-70 Miles	$4.37
Over 70 Miles	$6.87

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