Prepared for:
Midwestern State University
Wichita Falls, Texas

Mass Communications Project

Architectural and Structural

BID DOCUMENTS
SEPTEMBER 21, 2015
REES PROJECT No. 21503.00

REES
ARCHITECTURE PLANNING INTERIORS

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IN ADDITION TO THE SPECIFICATION SECTIONS NOTED WITHIN EACH BID PACKAGE, EACH PROPOSER IS RESPONSIBLE FOR ALL ITEMS INCLUDED IN DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS AND DIVISION 01- GENERAL REQUIREMENTS.

THIS PROJECT REQUIRES A MINIMUM ONE (1) YEAR WARRANTY BE PROVIDED FOR ALL LABOR AND MATERIAL. THIS IS A MINIMUM STANDARD AND ADDITIONAL WARRANTY LENGTH MAY BE REQUIRED FOR CERTAIN SPECIFICATION SECTIONS.

IN ADDITION TO THE INFORMATION INCLUDED IN THIS PROPOSAL PACKAGE MANUAL, EACH PROPOSER IS RESPONSIBLE FOR ALL ITEMS INCLUDED IN THE DRAWINGS AND SPECIFICATIONS AS PREPARED BY REES ARCHITECTS DATED SEPTEMBER 21, 2015.
BUFORD-THOMPSON COMPANY’S INSTRUCTIONS TO PROPOSERS

I. INSTRUCTIONS TO PROPOSERS

1.1 ELECTRONIC BIDDING DOCUMENTS

A. The complete bidding documents for this project will be available in electronic, downloadable format for subcontractor and supplier use in preparing proposals for this project via the MSU purchasing web site: http://mwsu.edu/purchasing/

B. The Proposal Package Manuals detailing specific work required and contractual obligations will be available with the bidding documents. BTC and MSU are not responsible for partial information obtained from other bidding websites or plans rooms. Addenda will be posted on the MSU purchasing web site. It is the responsibility of the proposers to obtain all of the addenda.

1.2 RECEIPT AND OPENING OF PROPOSALS

A. Sealed proposals for the Midwestern State University Mass Communications Project will be received by Midwestern State University until 2:00 PM, local time, October 27, 2015.

All proposals must be sealed and received in the office of the Director of Purchasing/Contract Management, Midwestern State University, Daniel Building, 3410 Taft, Midwestern State University, Wichita Falls, Texas 76308, no later than 2:00 PM, local time, November 3, 2015.

Proposals delivered to MSU are to be sealed in an envelope clearly labeled “RFP #735-16-8144 Proposal for Midwestern State University Mass Communications Project”. To be opened at 2:00 PM, November 3, 2015.” Be sure to clearly mark your company name and return address on the envelope.

Email proposals are preferred and to be sent directly to Stephen Shelley, stephen.shelley@mwsu.edu, with “RFP #735-16-8144 Proposal for Midwestern State University Mass Communications Project” in the subject line.

Fax proposals shall be sent to the attention of Stephen Shelley, 940-397-4530, with a cover sheet clearly marked with “RFP #735-16-8144 Proposal for Midwestern State University Mass Communications Project” and listing the total number of pages being transmitted.

B. A non-mandatory pre-proposal meeting will be held on Thursday, October 13, 2015 at 10:00 AM at the Shawnee Theater in Clark Student Center for all interested proposers. A site visit will be conducted immediately following a short discussion of the project requirements. This pre-proposal meeting is not mandatory but highly recommended and all proposers are responsible for any information discussed during the meeting.
1.3 PREPARATION OF PROPOSAL

A. Proposers will include all items indicated in the Project Manual and Construction Drawings prepared by Rees Architects for a complete proposal. Any deviations from the Project Manual, Construction Drawings, or Proposal Package Manual (prepared by BTC) must be listed as specific exclusions. By submitting a proposal each Proposer constitutes an incontrovertible representation by the Proposer that he has complied with requirement of the Contract Documents.

B. Payment and Performance bonds may be required by individual subcontractors for 100% of the proposed contract. Include as a separate line item, separate from the base bid amount, the cost to provide Payment and Performance bonds should bonds be required.

Minimum requirements for acceptable bond ratings are:

B+ to B++ rating with a Financial Size Category of IX (9) or higher
A- to A++ rating with a Financial Size Category of IV (4) or higher

A sample bond form has been provided in this Project Manual, deviations from the bond form will require review and approval by BTC. Provide a separate line item for the cost of bonds. Please acknowledge receipt of any addendum and alternates with your bid.

1.4 QUESTIONS

A. All questions regarding the proposal shall be submitted in writing via email to Stephen Shelley, stephen.shelley@mwsu.edu, with “RFP #735-16-8144 Proposal for Midwestern State University Mass Communications Project” in the subject line, or fax 940-397-4530, with a cover sheet clearly marked with “RFP #735-16-8144 Proposal for Midwestern State University Mass Communications Project” and listing the total number of pages being transmitted. Responses to questions will be distributed as addenda.

All Questions should be forwarded no later than 10:00 AM on October 19, 2015.

It shall be the responsibility of each proposer to notify MSU in writing, of any errors, omissions, discrepancies, unworkability and noncompliance with codes and regulations within the contract documents.

1.5 CONTRACT AWARD

A. Contracts shall be awarded based on the best value to the Owner that complies with the conditions of the proposal package, based on the selection criteria of the Construction Manager. However, Buford Thompson Company and MSU reserve the right to reject any and all proposals and to waive any informality in proposals received.
whenever any such rejection or waiver is in the interests of the Owner and Construction Manager. Trade contractors will be required to execute the attached Subcontract Agreement. Qualifications/exceptions concerning this Subcontract Agreement on bid form are NOT acceptable. Any exceptions to this Subcontract Agreement are required to be submitted to Keith Ruffner at least three (3) days prior to bid to be considered by Buford-Thompson Company. Otherwise, no exceptions will be considered.

1.6 SALES TAX

This project is exempt from sales tax on materials incorporated into the project.

1.7 SPECIAL PROVISIONS

A. This project requires a minimum one (1) year warranty be provided for all labor and material. This is a minimum standard and additional warranty length may be required for certain specification sections.

B. Any subcontractor performing asbestos abatement work will be required to provide Pollution Liability Insurance with a $5 million limit naming Buford-Thompson Company as additional insured and a waiver of subrogation will be required in addition to the requirements listed in Article VI of the attached Subcontract Agreement.
BUFORD-THOMPSON COMPANY’S SPECIAL CONDITIONS FOR
SUBCONTRACTORS

PART 1 – GENERAL

1.01 RELATED DOCUMENTS


C. All documents issued and/or prepared by Rees Architects, including all Project Manuals and related Construction Drawings.

1.03 DESCRIPTION

A. Indication on the drawings or mention in the specification of articles, materials, operations, or methods requires that the Subcontractor provide each item indicated or mentioned of the quality or subject to the qualifications noted, and perform according to the conditions stated, each operation described and provide therefore all necessary labor, equipment, services and incidentals. It is the subcontractor’s responsibility to ensure all performance requirements meet or exceed those specified, or performance provided by a specified manufacturer.

1.04 CONDITIONS OF THE CONTRACT

A. The Prime Contract and provisions of the Buford-Thompson Subcontract Agreement, bound herewith, and the provision of this section, form a part thereof and shall govern the work under each section.

B. The Subcontractor agrees, if their bid is accepted, to commence work on or before the date established in the written “Notice to Proceed” of the Owner and in accordance with the Construction Schedule that will be developed by the Construction Manager and to fully complete the Work within the completion dates included therein. A copy of the Construction Schedule as developed by the Construction Manager will be provided.

C. No Electrical “Hot” work will be allowed.

D. No equipment will be allowed on the slab without written approval of the Architect and the Structural Engineer.

E. Contracts shall be awarded based on the best value to the Owner that complies
with the conditions of the proposal package, based on the selection criteria of the Construction Manager. However, Buford Thompson Company and MSU reserve the right to reject any and all proposals and to waive any informality in proposals received whenever any such rejection or waiver is in the interests of the Owner and Construction Manager. By submitting a proposal, each offerer agrees to waive any claim it has or may have against the Owner, Architect, Construction Manager and its employees arising out of or in connection with the administration, evaluation, or recommendation of any proposer, waiver of any requirements under the submission documents, acceptance or rejection of any submission and award of a subcontract. All proposers agree that the final selection, in accordance with the established selection criteria, is subjective and as such the Construction Manager will determine the recommendation to the Owner for the selected subcontractor based on the information available and in the best interest of the Owner and the Construction Manager.

1.05 COORDINATION

A. Drawing details and other sections of these specifications covering work connected with or relating to that specified under a specific heading shall be examined for conditions, which may affect that part of the work. Failure to do so will not relieve those furnishing materials and/or labor under a specific heading from supplying materials or performing work reasonably necessary to properly coordinate their work with that of other trades.

1.06 SUBCONTRACTOR QUALIFICATION STATEMENT

ALL SUBCONTRACTORS BIDDING THIS PROJECT MUST SUBMIT THE ATTACHED SUBCONTRACTORS QUALIFICATION STATEMENT PRIOR TO SUBMITTING A BID OR IMMEDIATELY FOLLOWING A BID SUBMISSION. (SEE ATTACHED)

1.07 SUBCONTRACT AGREEMENT

A. EACH SUCCESSFUL AND QUALIFIED SUBCONTRACTOR WILL BE REQUIRED TO EXECUTE THE SUBCONTRACT AGREEMENT INCLUDED AS PART OF THE BIDDING DOCUMENTS.

B. All references to “Contractor” in these documents shall be interpreted to refer to the Construction Manager.

1.08 LAYING OUT OF WORK AND MEASUREMENTS

A. Withstanding any provisions to the contrary, each Subcontractor will be responsible for all field engineering and layout.

B. In all cases, figured dimensions and measurements at the site shall take precedence over scaled dimensions.
C. One electronic/digital copy of all submittals will be required to be submitted. Submittal will need to be in .pdf format and can be submitted on CD or via email. In addition to one electronic/digital submittal certain submittals will require a hard copy. The project manager will notify subcontractors if a hard copy is required.

1.09 DISCREPANCIES

A. In case of discrepancies within the drawing, within the specifications, or between the drawings and specifications, the better quality or greater quantity, in the opinion of the Architect and Construction Manager shall be furnished and installed.

1.10 PROTECTION

A. Each Subcontractor shall take over and assume responsibility for the premises in the area of their work and shall provide and maintain all protections required by the governing laws, regulations, and ordinances. The Subcontractor shall be responsible for any loss or damage caused by him or his workmen to the property of the Owner or to the work or materials installed, and shall make good any loss or damage or injury without cost to the Owner or Construction Manager.

B. The protection of adjacent property shall include but will not necessarily be limited to the erection and maintenance of shoring, underpinning, and fences as necessary to protect and support existing work to be left in place.

C. Finished floors shall be protected against damage by workmen and equipment during the performance of the work. Where materials are carried into the building, the building floors shall be covered to protect the work against dirt or grit being ground in.

D. Trees and shrubs on the site, which do not have to be removed for the new work, shall be protected against damage. No subcontractor shall remove or trim any trees and shrubs in the area without the express approval of the Architect and Construction Manager and the proper tree removal permits.

E. Each subcontractor shall send proper notices, make necessary arrangements, and perform other services required for the care, protection, and maintenance of the Public Utilities, including fireplugs and wires and all other items of this character on and around the building site.

1.11 EROSION CONTROL

A. All subcontractors will be required to modify, repair, adjust and add to the erosion control system and the provisions of the Storm Water Pollution
Prevention Plan as developed by the Construction Manager.

B. Subcontractor may be required to execute formal compliance certification documentation with respect to the Storm Water Pollution Prevention Plan and other documentation as required to meet and satisfy the requirements of the Environmental Protection Agency and/or the local governing authorities.

1.12 EXTRAS TO THE CONTRACT

A. Construction Manager intends to enforce and abide by all the provisions of the Subcontract Agreement, Article V as it pertains to compensation and claims for additional work performed.

1.13 INSURANCE REQUIREMENTS

A. Subcontractor shall refer to the attached Subcontract Agreement, Article VI for all provisions regarding insurance requirements and limits.

B. Note the provisions requiring an Additional Insured endorsement and Waiver of Subrogation in favor of the Construction Manager and its employees on the General Liability portion of the required coverage and a Waiver of Subrogation in favor of the Construction Manager and its employees with regard to Workers Compensation insurance. These provisions will be strictly enforced.

C. Note the special provisions for any contractor performing asbestos abatement work. Any subcontractor performing asbestos abatement work will be required to provide Pollution Liability Insurance with a $5 million limit naming Buford-Thompson Company as additional insured and a waiver of subrogation will be required in addition to the requirements listed in Article VI of the attached Subcontract Agreement.

1.14 JOB CLEAN-UP

A. In addition to the requirement and provisions of Article II, Section 2.06 of the Subcontract Agreement, subcontractors will be required to comply with the following additional provisions regarding job clean-up.

B. It is the responsibility of the Subcontractor to clean up trash and debris occasioned by the Work done hereunder on a daily basis and as directed by the Construction Manager and will, at all times, keep the project and premises clean.

C. In addition to the clean-up of your identifiable trash, the subcontractor will be required to participate in a general clean-up of the project under the direction of the Construction Manager as follows:
1. The Construction Manager will schedule a general clean-up of the project one day each week for a duration of eight (8) hours.

2. Each subcontractor who has worked on the project at any time during the previous week (a week is Sunday through Saturday) shall provide clean-up workers (construction workers) to be available at the time scheduled by the Construction Manager for the purpose of participating in the general clean-up of the entire project.

The number of clean-up workers to be provided by the subcontractor shall be proportionate the average number of employees for the current week.

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</tr>
<tr>
<td>21-30</td>
<td>3 clean-up workers</td>
</tr>
</tbody>
</table>

3. If the subcontractor has no employees on the project during the current week, he will not be required to participate in the general clean-up for that week.

4. Each subcontractor will be responsible for the participation of its subcontractors in the general clean-up work. Each subcontractor will provide clean-up workers in the same proportionate basis as established above. Each subcontractor shall provide their clean-up worker with a shovel and broom.

5. If, at any time, a subcontractor fails to participate as required by this section in the general clean-up of the project, removal of trash and debris as occasioned by the work done hereunder, or fails to perform other clean-up work as directed by the Construction Manager, the Construction Manager shall provide such clean-up labor and shall charge the subcontractor $150 for each day of occurrence. In the event of such instances, the Construction Manager will notify the subcontractor and a deductive change order will be issued for the amount of the expense and this amount will be retained from the subcontractor’s next application for payment.

6. Construction Manager will supply a dumpster for the use of the subcontractors. Certain subcontractors may be responsible for the hauling of their own debris and cannot use the dumpster. This requirement will be identified in the subsequent specifications for that work.
1.15 SAFETY

IT IS THE RESPONSIBILITY OF THE SUBCONTRACTOR BY FEDERAL LAW TO COMPLY WITH ALL OF THE OCCUPATIONAL SAFETY AND HEALTH STANDARDS FOR THE CONSTRUCTION INDUSTRY (29 CFR PART 1926 WITH ALL SUBSEQUENT AMMENDMENTS) AS PROMULGATED BY THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) OF THE U.S. DEPT. OF LABOR. THE CONSTRUCTION MANAGER MAY CONDUCT SAFETY INSPECTIONS. THE SUBCONTRACTOR WILL COOPERATE WITH THE CONSTRUCTION MANAGER AND OTHER SUBCONTRACTORS TO ENSURE THAT THE SITE IS MAINTAINED AS A SAFE WORK ENVIRONMENT. IT IS THE ADDITIONAL RESPONSIBILITY OF THE SUBCONTRACTOR TO ENSURE THAT ALL PERSONNEL, SUBCONTRACTORS, VENDORS, AND SUPPLIERS PERFORMING WORK ON THIS PROJECT KNOW, UNDERSTAND AND AGREE TO COMPLY WITH ALL OSHA, FEDERAL, STATE AND LOCAL PROVISIONS.

B. SUBCONTRACTORS WILL COMPLY WITH SAFETY DIRECTIVES, IF ANY, ISSUED BY THE OWNER AND CONSTRUCTION MANAGER. EACH SUBCONTRACTOR IS FULLY RESPONSIBLE FOR ALL SAFETY MATTERS APPLICABLE OR RELATED TO SUBCONTRACTOR’S WORK. ALL SUBCONTRACTORS ON SITE ARE REQUIRED TO COMPLY WITH OSHA GENERAL DUTY CLAUSE 29 USC 654 IN ADDITION TO ANY OTHER REQUIREMENTS. THE OWNER, ARCHITECT, AND CONSTRUCTION MANAGER ASSUME NO SAFETY RESPONSIBILITIES OR OBLIGATIONS OF ANY SUBCONTRACTOR NOR ANY DUTY TO NOTIFY SUBCONTRACTOR OF ANY SAFETY ISSUE OR VIOLATION.

1.16 PAYMENT AND PERFORMANCE BONDS

A. Each subcontractor shall provide separate pricing in their proposals for the costs of furnishing Labor and Material Payment Bond and Performance Bonds for the project. Bonds shall be executed by a surety company acceptable to the Construction Manager. Each bond shall be an amount equal to one hundred percent (100%) of the contract price. The Performance Bond and Labor and Material Bond may be in one or separate agreements in accordance with local law and are to be delivered to the Construction Manager, if required, no later than the date of the execution of the contract.

B. Only those surety companies listed as approved on the Department of Treasury’s Listing of Approved Sureties and authorized to do business in the State of Texas will be considered as acceptable sureties.

The Surety shall have the following minimum requirements: Best’s Rating of
B+ to B++ and a Financial Size Category listing of no lower than IX (9), or, Best’s Rating of A- to A++ and a Financial Size Category listing of no lower than IV (4). Bonds shall be executed and approved by Contractor prior to beginning work.

C. If any bond is in excess of ten percent (10%) of the surety’s capital and surplus, the bond will not be accepted unless, as a condition to acceptance of the bond, the surety delivers to the Construction Manager written certification that the surety has reinsured the risk that exceeds ten percent (10%) of the surety’s capital and surplus with a duly authorized, accredited, or trusted reinsurer. The amount reinsured by such reinsurer shall not exceed ten percent (10%) of the reinsurer’s capital and surplus. Further, the surety shall deliver to the Construction Manager a copy of the reinsurance agreement, which must adequately assure the Construction Manager, as a condition of acceptance, that such risks have been adequately reinsured in accordance with the accepted industry practices.

1.17 WAGE RATES

A. Subcontractor shall comply with all wage rate requirements as set forth in the prevailing wage rate schedule in the Contract Documents.

END OF SECTION
Buford-Thompson Company (Construction Manager at Risk for Midwestern State University) invites interested proposers to provide a lump sum proposal for the project described below.

Sealed proposals for the Midwestern State University Mass Communication, will be received by Midwestern State University until 2:00 PM, local time, November 3, 2015.

All proposals must be sealed and received in the office of the Director of Purchasing/Contract Management, Midwestern State University, Daniel Building, 3410 Taft, Midwestern State University, Wichita Falls, Texas 76308, no later than 2:00 PM, local time, November 3, 2015.

Proposals delivered to MSU are to be sealed in an envelope clearly labeled “RFP #735-16-8144 Proposal for Midwestern State University Mass Communication”. To be opened at 2:00 PM, local time, November 3, 2015.” Be sure to clearly mark your company name and return address on the envelope.

Email proposals are preferred and to be sent directly to Stephen Shelley, stephen.shelley@mwsu.edu, with “RFP #735-16-8144 Proposal for Midwestern State University Mass Communication” in the subject line.

Fax proposals shall be sent to the attention of Stephen Shelley, 940-397-4530, with a cover sheet clearly marked with “RFP #735-16-8144 Proposal for Midwestern State University Mass Communication” and listing the total number of pages being transmitted.

This work is scheduled to begin in December 2015 and complete in October 2016.

The Drawings and Specifications for this project will be available in electronic, downloadable format for subcontractor and supplier use via the MSU purchasing web site: http://mwsu.edu/purchasing/

A non-mandatory pre-proposal meeting will be held on Thursday, October 13, 2015 at 10:00 AM at the Shawnee Theater in Clark Student Center for all interested proposers. A site visit will be conducted immediately following a short discussion of the project requirements. This pre-proposal meeting is not mandatory but highly recommended and all proposers are responsible for any information discussed during the meeting.

Questions about the Project should be addressed to:

Stephen Shelley  
Proposal RFP #735-16-8144  
Midwestern State University  
Director of Purchasing/Contract Management  
3410 Taft Blvd.  
Wichita Falls, TX 76308  
940-397-4110  
stephen.shelley@mwsu.edu

All Questions should be forwarded no later than 10:00 AM, October 19, 2015.
Please complete this statement if you have not submitted one within the last 24 months.

BUFORD•THOMPSON COMPANY
Construction Managers

This Document was prepared solely by Buford-Thompson Company

Subcontractor’s Qualification Statement

The Undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter.

Date: ____________________________________________ ___________________________

Submitted By: ___________________________________ ____________________________________

E-Mail: ___________________________________________ ____________________________

Title: ____________________________________________ ___________________________

Name of Company: __________________________________ ______________________________________

Address: __________________________________________ ______________________________

Phone: ____________________________________________ ____________________________

1. Specifically, what type of work does your organization perform? Please check all packages that apply.

<table>
<thead>
<tr>
<th>Check all that apply</th>
<th>PROPOSAL PACKAGE</th>
<th>SCOPE OF WORK</th>
<th>Check all that apply</th>
<th>PROPOSAL PACKAGE</th>
<th>SCOPE OF WORK</th>
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<td>Residential Appliances</td>
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<td>Concrete</td>
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<td>Stage Equipment/Curtains</td>
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<td>Athletic Field Equipment</td>
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<td>11H</td>
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<td>5A</td>
<td>Structural and Miscellaneous Steel</td>
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<td>Window Blinds</td>
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<tr>
<td>5B</td>
<td>Decorative Railings</td>
<td>12B</td>
<td>Laboratory Casework</td>
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<tr>
<td>5C</td>
<td>Platform Scaffolding</td>
<td>12C</td>
<td>Fixed Auditorium Seating</td>
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<td>6A</td>
<td>Millwork/Finish Carpentry</td>
<td>12D</td>
<td>Fixed Gymnasium Seating</td>
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<tr>
<td>6B</td>
<td>Rough Carpentry (includes Laminate Beams)</td>
<td>12E</td>
<td>Telescoping Stands</td>
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<td>6C</td>
<td>Plastic Laminate Wall Panels</td>
<td>12F</td>
<td>Lecture Seating</td>
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<td>Library Casework/Equipment</td>
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<td>Pre-Engineered Metal Building</td>
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<td>Sound Conditioned Rooms</td>
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<td>14C</td>
<td>Laundry/Trash Chutes</td>
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<td>Fire Suppression</td>
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<td>Sound and Program Systems</td>
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<td>Access Control System</td>
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<td>Wood Athletic Flooring</td>
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<td>Fire Alarm System</td>
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<td>Earthwork</td>
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<td>Toilet Partitions/Accessories</td>
<td>32D</td>
<td>Athletic Fields</td>
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<td>Playground Equipment and Structures</td>
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<td>10F</td>
<td>Folding Partitions</td>
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<td>Unit Pavers</td>
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<td>10G</td>
<td>Display Cases</td>
<td>33A</td>
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<tr>
<td>10H</td>
<td>Miscellaneous Specialties (includes Headwalls)</td>
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<td></td>
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</table>

Please list any that do not fall in the above packages: ___________________________________________

2. What is your annual volume for the previous three years?

Year ____________________ [ ] 0-50K [ ] 50-100K [ ] 100-500K [ ] 500K+
Year ____________________ [ ] 0-50K [ ] 50-100K [ ] 100-500K [ ] 500K+
Year ____________________ [ ] 0-50K [ ] 50-100K [ ] 100-500K [ ] 500K+

3. How many years has your organization been in business under its present business name? __________
4. Under what other or former names has your organization operated?

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. Do you operate as a Corporation? __________________________

If yes, date of Incorporation: __________________________
State of Incorporation: __________________________
If not, what type of Organization? __________________________

Officers, Principals and Partners:

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Address</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
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</tbody>
</table>

6. Are you a Certified Minority Organization?  ____YES  ____NO

If yes, list the Certification number(s), Expiration date(s) and the Agency that issued below.

<table>
<thead>
<tr>
<th>Certification</th>
<th>Cert. #</th>
<th>Exp. date</th>
<th>Agency</th>
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</thead>
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<tr>
<td>DVBE (Disabled Veteran Owned Business Enterprise)</td>
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<tr>
<td>ESB (Emerging Small Business)</td>
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<tr>
<td>FED HUB ZONE (Federal HUB Zone Certification)</td>
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<td>FED SB (Federal Small Business)</td>
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<tr>
<td>FED SBA 8A (Federal SBA 8a Certification)</td>
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<tr>
<td>FED SDB (Federal Small Disadvantaged Business)</td>
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<tr>
<td>FED SDVOSB (Federal Service Disabled Veteran Owned Business)</td>
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<td></td>
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<tr>
<td>FED VOSB (Federal Veteran Owned Small Business)</td>
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<tr>
<td>FED WOSB (Federal Woman Owned Small Business)</td>
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</tr>
<tr>
<td>MBE (Minority Owned Business)</td>
<td></td>
<td></td>
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<tr>
<td>NONE (None)</td>
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<td>OTHER (Other)</td>
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<tr>
<td>SBA 8(a) (Small Business 8(a) Business Development)</td>
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<td>SBE (Small Business)</td>
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<tr>
<td>SDVOB (Service-Disabled Veteran-Owned Business)</td>
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<td>SDVOSB (Service-Disabled Veteran-Owned Small Business)</td>
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<tr>
<td>SMBE (Small Minority Business Enterprise)</td>
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<tr>
<td>SWBE (Small Woman Business Enterprise)</td>
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<td>VOB (Veteran Owned Business)</td>
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<tr>
<td>VOSB (Veteran Owned Small Business)</td>
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<tr>
<td>WBE (Woman Owned Business)</td>
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</tr>
<tr>
<td>WOSB (Women-Owned Small Business)</td>
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</table>

7. Does your organization currently have in force, the following insurance coverage?  ____YES  ____NO

*INSERT CERTIFICATE OF LIABILITY INSURANCE*

Note: Please return most recent certificate of insurance, indicating current coverage of above, and insurance company rating(s) as noted, with completed qualification statement.
8. What percentage of work do you normally perform with your own forces? ____%

8A. Number of Executive Management? ____
8B. Number of Licensed/Certified Field Managers for your Trade? (E.g. Licensed Electrical, Master Plumber, etc.) ____
8C. Number of Laborers? ____

9. Have you failed to complete any work awarded to you?

If so, note when, where and why:
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________
___________________________________________________

10. Within the last five years, has any officer or partner of your organization ever been an officer or partner of another organization when it failed to complete a construction contract? ___YES ___NO

11. List the construction experience of the Executive Management of your organization:
(Attach additional pages if necessary.)

<table>
<thead>
<tr>
<th>Individual’s Name:</th>
<th>Present Position or Office:</th>
<th>Magnitude and Type of Work:</th>
<th>Individual’s E-mail:</th>
<th>Years of Construction Experience:</th>
<th>In What Capacity:</th>
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</thead>
<tbody>
<tr>
<td>Individual’s Name:</td>
<td>Present Position or Office:</td>
<td>Magnitude and Type of Work:</td>
<td>Individual’s E-mail:</td>
<td>Years of Construction Experience:</td>
<td>In What Capacity:</td>
</tr>
<tr>
<td>Individual’s Name:</td>
<td>Present Position or Office:</td>
<td>Magnitude and Type of Work:</td>
<td>Individual’s E-mail:</td>
<td>Years of Construction Experience:</td>
<td>In What Capacity:</td>
</tr>
<tr>
<td>Individual’s Name:</td>
<td>Present Position or Office:</td>
<td>Magnitude and Type of Work:</td>
<td>Individual’s E-mail:</td>
<td>Years of Construction Experience:</td>
<td>In What Capacity:</td>
</tr>
</tbody>
</table>

11A. List the names of the Estimators:

| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
11B. List the names of the Project Managers:


11C. List the names of the Field Superintendents and any certifications they have:


11D. Provide the name of the Safety Director, their level of experience and any certifications; or an individual responsible to develop and implement your Company Safety Plan:


11E. Current WC Experience Modifier Rate (Your insurance agent can give you your EMR #)


12. List ALL reportable accidents over the past (5) five years.


13. List ALL owned major equipment (valued over $100,000).


14. List ALL major construction projects your organization has in progress: (List ALL projects you have been awarded and not been paid retainage).

<p>| Project Name: | |
| Description of Work Contracted: | |
| Contract with (Name and Address): | |
| Individual to Contact (Name, Title, Phone and E-mail): | |
| Contract Amount: | Percent Complete: |
| Schedule Completion | |</p>
<table>
<thead>
<tr>
<th>Project Name</th>
<th>Description of Work Contracted</th>
<th>Contract with (Name and Address)</th>
<th>Individual to Contact (Name, Title, Phone and E-mail)</th>
<th>Contract Amount</th>
<th>Percent Complete:</th>
<th>Schedule Completion</th>
</tr>
</thead>
</table>

Project Name:  
Description of Work Contracted:  
Contract with (Name and Address)  
Individual to Contact (Name, Title, Phone and E-mail):  
Contract Amount:  
Percent Complete:  
Schedule Completion

Project Name:  
Description of Work Contracted:  
Contract with (Name and Address)  
Individual to Contact (Name, Title, Phone and E-mail):  
Contract Amount:  
Percent Complete:  
Schedule Completion

Project Name:  
Description of Work Contracted:  
Contract with (Name and Address)  
Individual to Contact (Name, Title, Phone and E-mail):  
Contract Amount:  
Percent Complete:  
Schedule Completion

15. List ALL the major projects your organization has completed in the past three years:

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Description of Work Contracted:  
Contract with (Name and Address)  
Individual to Contact (Name, Title, Phone and E-mail):  
Contract Amount:  
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16. Trade References:

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17. Bonding capacity and current amount under bond? ____________________________

18. Submit a financial statement, audited if available, including latest balance sheet and income statement showing the following items: (*E-mail directly to Keith Ruffner @ KRuffner@Buford-Thompson.com*)

A. Current Assets (e.g. cash, joint venture accounts, accounts receivable, notes receivable, accrued income, deposits, materials inventory and prepaid expenses.
B. Net Fixed Assets.
C. Other Assets.
D. Current Liabilities (e.g. accounts payable, notes payable, accrued expenses, provision for income taxes, advances, accrued salaries, and accrued payroll taxes.)
E. Other Liabilities (e.g. capital, capital stock authorized and outstanding shares par values, earned surplus, and retained earnings.
F. Name of firm preparing financial statement and date thereof.

Is this financial statement for the identical organization named on page one? _____ YES _____ NO

If not, explain the relationship and financial responsibility of the organization whose financial statement is provided (e.g. parent-subsidiary) ____________________________________________________________

Dated at _____ AM/PM this ___ day of ___________, 20__.

By: __________________________

Title: _________________________
AGREEMENT BETWEEN
MIDWESTERN STATE UNIVERSITY
AND
BUFORD THOMPSON CONSTRUCTION INC
CONSTRUCTION MANAGER-AT-RISK

This Agreement is made as of December 18, 2014 (the “Effective Date”), by and between

The Owner: The Board of Regents of Midwestern State University
c/o Midwestern State University
3410 Taft Blvd.
Wichita Falls, Texas 76308

and Construction Manager: Mr. Sammy Martin
Buford-Thompson Company LLC
1450 N. Jim Wright Freeway
White Settlement, Texas 76108

for the Project: Construction Management Services Mass Communications Project

1025 North Stemmons Freeway, Suite 737
Dallas, Texas 75207
Attn: Mr. Robert Genter

The Owner and the Construction Manager agree as follows:
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ARTICLE 1  SCOPE OF WORK

The Construction Manager has overall responsibility for and shall provide complete Pre-Construction Phase and Construction Phase Services and furnish all materials, equipment, tools and labor as necessary or reasonably inferable to complete the Work, or any phase of the Work, in accordance with the Owner’s requirements and the terms of the Contract Documents.

ARTICLE 2  CONTRACT DOCUMENTS

2.1  The Contract Documents consist of:

a. This Agreement and all exhibits and attachments listed, contained or referenced in this Agreement;
b. The Uniform General and Supplementary Conditions for Building Construction Contracts for Midwestern State University (“Uniform General and Supplementary Conditions” or “UGC”);
c. Special Conditions and Owner’s Specifications;
d. All Addenda issued prior to the Effective Date of this Agreement;
e. The Guaranteed Maximum Price Proposal when accepted by the Owner and executed by the parties;
f. All Change Orders issued after the Effective Date of this Agreement;
g. The Drawings, Specifications, details and other documents developed by Project Architect to describe the Project and accepted by Owner;
h. The Drawings and Specifications developed or prepared by Owner’s other consultants, if any, and accepted by the Owner; and
i. The HUB Subcontracting plan submitted by the Construction Manager in response to the Request for Proposals issued by the Owner for this Project.

2.2  The Contract Documents form the entire and integrated Contract between Owner and Construction Manager and supersede all prior negotiations, representations or agreements, written or oral.

2.3  The term “Construction Manager” shall be interchangeable with the terms “Contractor” and “General Contractor” or other similar terms as appropriate in the Contract Documents.

ARTICLE 3  DEFINITIONS

The terms, words and phrases used in the Contract Documents shall have the meanings given in the Uniform General and Supplementary Conditions and as follows.

3.1  “Construction Cost Limitation” (CCL) means the maximum monetary amount payable to the Construction Manager for all Construction Phase services, materials, labor and other work required for completion of the Work in accordance with the Contract Documents. The CCL includes, without limitation, the General Conditions Costs, the Cost of the Work, the Construction Phase Fee and the Construction Manager’s Contingency. The CCL may be adjusted by the parties for changes in the scope of the Project before or after acceptance of the Guaranteed Maximum Price Proposal. The CCL does not include the Construction Manager’s Pre-Construction Phase Fee, or Owner’s Construction Contingency or Owner’s Special Cash Allowance.
3.2 **Construction Documents** means, collectively, the UGCs, Owner’s Special Conditions and Specifications, the Drawings, Specifications, details, Change Orders and other documents prepared by the Project Architect, its consultants and by the Owner’s other consultants that describe the scope and quality of the Project and the materials, supplies, equipment, systems and other elements that are required for construction of the Project that are accepted by the Owner.

3.3 **Construction Phase Services** means the coordination, implementation and execution of the Work required by the Contract Documents.

3.4 **Contract Sum** means the total amount of all compensation payable to the Construction Manager for the Project and shall not exceed the sum total amount of the Pre-Construction Phase Fee plus the Guaranteed Maximum Price Proposal accepted by the parties, subject to adjustment for Additional Services or Change Orders. Any costs that exceed the Contract Sum shall be borne solely by Construction Manager without reimbursement by Owner.

3.5 **Direct Construction Cost** means the sum of the amounts that the Construction Manager actually and necessarily incurs for General Conditions Costs, Cost of the Work and Construction Manager’s Contingency during the Construction Phase as allowed by this Agreement. Direct Construction Cost does not include Pre-Construction Phase Fees or Construction Phase Fees.

3.6 **Estimated Construction Cost** (ECC) means the amount calculated by the Construction Manager for the total cost of all elements of the Work based on the Contract Documents available at the time(s) that the ECC is prepared. The ECC shall be based on current market rates with reasonable allowance for overhead, profit and price escalation and shall include and consider, without limitation, all alternates, allowances and contingencies, designed and specified by the Project Architect and the cost of labor and materials necessary for installation of Owner furnished equipment. The ECC shall not include Construction Manager’s Pre-Construction Phase Fee, Project Architect Fees, cost of the land, rights-of-way, or any other costs that are the direct responsibility of the Owner.

3.7 **Guaranteed Maximum Price** or “GMP” means the amount proposed by the Construction Manager and accepted by the Owner as the maximum cost to the Owner for construction of the Work in accordance with the Contract Documents. The GMP includes Construction Manager’s Construction Phase Fee, the General Conditions Costs, the Cost of the Work, Construction Manager’s Construction Contingency amount, and the Owner’s Construction Contingency amount and Owner’s Special Cash Allowance.

3.8 **General Conditions Cost** means costs incurred and minor work performed by the Construction Manager without the need for competitive bids/proposals as allowed under Texas Education Code section 51.782(i), as amended. The allowable General Conditions items are further described and limited by attached exhibit.

3.9 **Monthly Salary Rate** means the amount agreed to by the Owner that can be used on Applications for Payment throughout the Construction Phase to account for the services of Construction Manager’s salaried personnel assigned to the Project. A Monthly Salary Rate must be established for each salaried person and must be approved in writing by the Owner in advance of any Application for Payment for that person. The Monthly Salary Rate is for convenience only and any payments made for Construction Manager’s personnel are subject to audit to determine the actual cost of the wages and allowable employer contributions incurred by the Construction Manager for services performed for the Project.
3.10 "Owner’s Specifications" means the construction and contract administration requirements and standards detailed in the Owner’s Specifications exhibit attached to this Agreement.

3.11 "Pre-Construction Phase Services" means the participation, documentation and execution of the Construction Manager’s Pre-Construction Phase deliverables as required by the Contract Documents.

3.12 "Preliminary Project Cost" (PPC) means the total estimated cost of the entire Project, including design, construction, and other associated costs and services that is established by the Owner prior to the commencement of design.

3.13 "Project Architect" means the professional architect or engineer employed by the Owner as architect or engineer of record for the Project and its consultants.

3.14 "Project Team" means the Owner, Construction Manager, Project Architect and its consultants, any separate contractors employed by Owner, and other consultants employed for the purpose of programming, design, and construction of the Project. The members of the Project Team will be designated by Owner and may be modified from time to time by Owner.

3.15 "Subcontractor" means a person or entity who has an agreement with the Construction Manager to perform any portion of the Work. The term Subcontractor does not include the Project Architect or any person or entity hired directly by the Owner.

3.16 "Total Project Cost" (TPC) means the total budget established for the Project by Midwestern State University at the end of the design development phase (subject to subsequent modification by Owner). The TPC includes, but is not limited to, Construction Manager’s Pre-Construction Fee, Guaranteed Maximum Price Proposal(s), Project Architect and other professional service fees, and other miscellaneous Project costs.

3.17 "Work" means the provision of all services, labor, materials, supplies, and equipment that are required of the Construction Manager to complete the Project in strict accordance with the requirements of the Contract and the Construction Documents. Work includes, but is not limited to, the Construction Phase Services, additional work required by Change Orders, and any other work reasonably inferable from the Construction Documents. The term "reasonably inferable" takes into consideration the understanding of the parties that some details necessary for completion of the Work may not be shown on the Drawings or included in the Specifications, but they are a requirement of the Work if they are a usual and customary component of the Work or otherwise necessary for complete installation and operation of the Work.

3.18 "Worker Wage Rate" means the actual hourly wage of non-salaried persons performing work on the Project plus allowable employer contributions as established on the Worker Wage Rate Form required by the Construction Documents. The Worker Wage Rate for individual persons must be reasonable and customary for their industry and must be approved in writing by the Owner in advance of any Application for Payment for that person. Any payments made for Construction Manager’s personnel are subject to audit to determine the actual cost of the wages and allowable employer contributions incurred by the Construction Manager for services performed for the Project.
ARTICLE 4 CONSTRUCTION MANAGER’S GENERAL RESPONSIBILITIES

4.1 Construction Manager shall perform all services specifically allocated to it by the Contract Documents as well as those services reasonably inferable from the Construction Documents as necessary for completion of the Work and the Project. Construction Manager agrees to perform these services using its best efforts, skills, judgments and abilities.

4.2 Construction Manager shall cooperate with the Project Architect and endeavor to further the interests of the Owner and the Project. Construction Manager shall furnish Pre-Construction Phase Services and Construction Phase Services and complete the Project in an expeditious and economical manner consistent with the interests of the Owner and in accordance with the Project Schedule.

4.3 Construction Manager shall designate a representative authorized to act on the Construction Manager’s behalf with respect to the Project.

4.4 Construction Manager shall establish procedures for communication and coordination among the Project Team, Subcontractors, separate contractors, and others with respect to all aspects of the construction of the Project, and implement such procedures.

4.5 Construction Manager shall establish and maintain a numbering and tracking system for all Project records, including changes, requests for information, submittals, and supplementary instructions and shall provide updated records at each Owner’s meeting and when requested.

4.6 Fast Track/Multiple Completion Times. If the Owner elects to “fast-track” or develop the Project in multiple stages, Construction Manager shall organize and perform its services as appropriate to each stage. Each stage of the Project may have a unique schedule for completion and a specific Construction Cost Limitation, at Owner’s discretion.

4.7 Construction Manager has identified to the Owner the employees and other personnel that it will assign to the Project and they include Jimmy Birdwell-Estimator, Grayson Murdock-Information Technology Manager, Charles Jones-Quality Engineer, Terry Gober-Project Manager, Dale Murphree-Superintendent. Construction Manager shall provide the Monthly Salary Rate for each of them. Construction Manager shall also identify any consultants that will be performing services for the Project. After execution of this Agreement by the Owner, Construction Manager shall not remove or replace the persons or entities assigned to the Project except with the Owner’s written consent. Construction Manager shall not assign to the Project or contract with any person or entity to which Owner has a reasonable objection. Construction Manager shall promptly update the list of persons and consultants if they change during the course of the Project.

4.8 The Owner’s Policy on the Utilization of Historically Underutilized Businesses (“Policy”) is described in an attached exhibit. Construction Manager, as a provision of the Agreement, must comply with the requirements of the Policy and adhere to the HUB Subcontracting Plans submitted for Pre-Construction Phase and Construction Phase Services. No changes to the HUB Subcontracting Plans can be made by the Construction Manager without the written approval of Owner in accordance with the Policy.
ARTICLE 5  PRE-CONSTRUCTION PHASE SERVICES

The Pre-Construction Phase shall be deemed to commence upon the date specified in a Notice to Proceed with Pre-Construction Phase Services issued by Owner and shall continue through completion of the Construction Documents and procurement of all major Subcontractor agreements. Construction Manager is not entitled to reimbursement for any costs incurred for Pre-Construction Phase Services performed before issuance of the Notice to Proceed. Pre-Construction Phase Services may overlap Construction Phase Services. The Construction Manager shall perform the following Pre-Construction Phase Services.

5.1 General Coordination

5.1.1 The Construction Manager’s Pre-construction Phase Services team shall attend Project Team meetings with the Owner, the Owner’s representatives, and the Project Architect at regularly scheduled intervals throughout the Pre-Construction Phase. Frequent Project Team meetings are anticipated prior to the Owner’s acceptance of the GMP and during completion of the Construction Documents.

5.1.2 Provide a preliminary evaluation of the Owner’s Design Criteria and the Construction Cost Limitation, each in terms of the other.

5.1.3 Review and understand the standards and requirements in Owner’s Specifications and perform all services in accordance with those standards and requirements.

5.1.4 Visit the site and inspect the existing facilities, systems and conditions to insure an accurate understanding of the existing conditions as required.

5.1.5 Provide recommendations and information to the Project Team on: site usage and site improvements; building systems, equipment and construction feasibility; selection and availability of materials and labor; time requirements for installation and construction; assignment of responsibilities for safety precautions and programs; temporary Project facilities; equipment, materials and services for common use of the Construction Manager and Owner’s separate contractors, if any; cost factors, including costs of alternative materials or designs, preliminary budgets, and possible cost savings; recognizing and tracking the resolution of conflicts in the proposed Drawings and Specifications; methods of delivery of materials, systems, and equipment; and any other matters necessary to accomplish the Project in accordance with the Project Schedule (as defined below) and the CCL.

5.1.6 Assist the Owner in selecting and directing the services of surveyors, soils engineers, existing facility surveys, testing and balancing, environmental surveys or other special consultants hired by the Owner to develop additional information for the design or construction of the Project.

5.1.7 At Owner’s request, attend public meetings and hearings concerning the development and schedule of the Project.

5.2 Constructability Program

5.2.1 Implement and conduct a constructability program to identify and document Project cost and schedule savings opportunities. The constructability program shall follow accepted industry
practices and be in accordance with the requirements of the attached exhibit. Whenever the term “value engineering” is used in conjunction with this Agreement or the Project, it has its commonly accepted meaning within the construction industry and does not imply the practice of professional engineering without a license. If any value engineering activities constitute the professional practice of engineering, then such activities shall be performed by an engineer licensed in Texas.

5.2.2 Provide and implement a system for tracking questions, resolutions, decisions, directions and other information matters that arise during the development of the Drawings and Specifications for the Project. The decision tracking system shall be in a format approved by the Owner and updated at least monthly during the Pre-Construction Phase.

5.3 Scheduling

5.3.1 Develop a critical path method schedule (“CPM Schedule”) for Project Team review and the Owner's approval, that coordinates and integrates activities on the Project, including the Construction Manager's services, the Project Architect's design services, the work of other consultants and suppliers, and the Owner's activities with the anticipated construction schedules for other contractors. The CPM Schedule must identify all major milestones through Project Final Completion. The CPM Schedule shall be created and maintained in accordance with the Owner’s Specifications using the Owner specified format and software.

5.3.2 The Construction Manager shall update the CPM Schedule throughout the Pre-Construction and Construction Phases as described in the Owner’s Specifications.

5.3.3 The CPM Schedule shall include other detailed schedule activities as directed by the Owner including, but not limited to, Owner-managed work under separate contracts such as equipment, furniture and furnishings, telephones, project security, property protection, life-safety systems, integration with central campus monitoring systems, information and instructional technology data-transmission systems, and computer technology systems.

5.4 Budget and Cost Consultation

5.4.1 The Construction Manager is responsible for preparing and updating all procurement and construction cost estimates and distributing them to the Project Team throughout the duration of the Project.

5.4.2 Provided Estimated Construction Cost (ECC) reports at the required stages of completion of the schematic design, design development, and construction documents phases of the Project as required in Article 25. The Estimated Construction Cost reports for the design development and construction documents phases shall be detailed estimates derived from cost quantity surveys based on unit prices for labor, materials, overhead and profit, organized in Construction Specifications Institute Division 1-16 format for each portion of the Work.

5.4.3 Provide continuous cost consultation services throughout the duration of the Project, including identification and tracking of decisions that affect the scope or quality of the Project and providing ongoing updates of their cost and budget impact. Advise the Project Team immediately if the Construction Manager has reason to believe that the most current ECC will

CM-at-Risk Agreement—July 2011 8
exceed the Construction Cost Limitation (CCL) or not meet Schedule requirements and recommend reasonable strategies for bringing the Project in line with the CCL and the Schedule.

5.4.4 Construction Manager shall promptly identify all variances between estimated costs and actual costs during the Construction Phase, and shall promptly report such variances to the Project Team along with recommendations for action, but in any event no more than two (2) business days after acquiring such information.

5.4.5 Should any ECC exceed or fall significantly below the approved CCL, the Owner and Construction Manager shall negotiate changes to the Project requirements or the CCL as required.

5.5 Coordination of Design and Construction Contract Documents

5.5.1 Review all Drawings, Specifications, and other Construction Documents as they are developed by the Project Architect during the schematic design, design development, and construction documents design phases of the Project.

5.5.2 Consult with Owner and Project Architect on the selection of materials, equipment, component systems, and types of construction used on the Project. Advise Owner on site use, construction feasibility, availability of labor and materials, procurement time requirements, and construction coordination.

5.5.3 Advise Owner of any error, inconsistency or omission discovered in the Drawings, Specifications, and other Construction Documents.

5.5.4 Advise Owner on reasonable adjustments in the Project scope, quality or other options for keeping the Project cost within the CCL.

5.5.5 Review the Construction Documents for compliance with all applicable laws, rules and regulations and with Midwestern State University requirements.

5.6 Construction Planning and Bid Package Strategy

5.6.1 Identify equipment or material requiring extended delivery times and advise Owner on expedited procurement of those items. Advise Owner and Project Architect on the preparation of performance specifications and requests for technical proposals for the procurement and installation of systems and components and for the procurement of long lead items. If requested by Owner, and subject to Owner’s prior approval, issue requests for technical proposals to qualified sources and receive proposals and assist in their evaluation.

5.6.2 Make recommendations to the Project Team regarding organization of the Construction Documents to facilitate the bidding and awarding of construction subcontracts in a manner that promotes the interests of the Project and the Owner. These recommendations may include, but are not limited to, phased or staged construction or multiple separate contracts. The recommendations shall take into consideration such factors as time of performance, type and scope of work, availability of labor and materials, overlapping trade jurisdictions, provisions for temporary facilities, comparisons of factory and on-site production costs, shipping costs, code restrictions, the Owner’s goals for HUB contractor participation, and other constraints.
5.6.3 Review the Construction Documents with the Project Team to eliminate areas of conflict and overlap in the work to be performed by the various Subcontractors or Owner’s separate contractors.

5.6.4 Develop a bid/proposal package strategy in coordination with the Project Architect that addresses the entire scope of work for each phase and stage of the Project. In developing the bid/proposal package strategy, the Construction Manager shall identify all bid/proposal packages on which the Construction Manager intends to submit a self-performance bid/proposal. The bid/proposal package strategy shall be reviewed with the Owner on a regular basis and revised throughout the buyout of the Project so as to best promote the interests of the Project and the Owner.

5.6.5 Assist the Owner, the Project Architect, Owner’s other consultants, and the Owner’s separate contractors in obtaining all applicable risk management, code, and regulatory agency reviews and approvals for the Project including, without limitation, the Texas Higher Education Coordinating Board, the Texas Department of Licensing and Regulation, the State Fire Marshal, the local fire department, and the Owner’s insurance provider.

5.6.6 Refine, implement and monitor required HUB Subcontracting Plans to promote equal employment opportunity in the provision of goods and services to the Owner for the Project.

5.6.7 Advise Owner of any tests to be performed, and assist Owner in selecting testing laboratories and consultants, without assuming direct responsibility for the work of such laboratories and consultants.

5.6.8 Construction Manager shall review the Construction Documents to ensure that they contain adequate provision for all temporary facilities necessary for performance of the Work, and provisions for all of the job site facilities necessary to manage, inspect, and supervise construction of the Work.

5.6.9 Provide an analysis of the types and quantities of labor required for the Project and review the appropriate categories of labor required for critical phases or Stages. Make recommendations that minimize adverse effects of labor shortages.

5.6.10 Furniture, Fixtures and Equipment. Consult with and make recommendations to the Owner on the acquisition schedule for fixtures, furniture and equipment, and coordinate with the Owner as may be required to meet the Schedule.

5.7 Obtaining Bids/Proposals for the Work

5.7.1 In accordance with Texas Education Code section 51.782, as amended, Construction Manager shall publicly advertise and solicit competitive lump sum bids/proposals from trade contractors or subcontractors for the performance of all major elements of the work other than the minor work that may be included in General Conditions. Criteria for determining the bid/proposal that provides the best value to the Owner shall be established by the Project Team and included in the request for bids/proposals. The Construction Manager shall notify the Owner in advance in writing of the date it will receive the bids/proposals.
5.7.2 Schedule and conduct pre-bid conferences with interested bidders/proposers, Subcontractors, material suppliers, and equipment suppliers, and record minutes of the conferences.

5.7.3 Construction Manager and Owner shall review all trade contractor or Subcontractor bids/proposals in a manner that does not disclose the contents of any bid/proposal to persons outside of the Project Team during the selection process. Based on the selection criteria included in the request for proposals, Construction Manager shall recommend to the Owner the bid/proposal that provides the best value for the Project. Upon Owner’s concurrence in the recommendation, Construction Manager may negotiate the terms of the subcontract with the apparent best value bidder/proposer.

5.7.4 All subcontracts must be on a lump sum basis unless other payment terms are approved in writing and in advance by the Associate Vice President of Facility Services. Upon Owner’s concurrence in the final terms of the subcontract, Construction Manager shall enter into a written subcontract for the subcontract work and provide a copy to the Owner. All bids/proposals shall be publicly available after award of the subcontract or within seven (7) days after the date of final selection, whichever is later.

5.7.5 If Construction Manager reviews, evaluates, and recommends to Owner a bid/proposal from a trade contractor or subcontractor, but Owner requires another bid/proposal to be accepted, Owner shall compensate Construction Manager by a change in price, time, or Guaranteed Maximum Price for any additional cost and risk that Construction Manager incurs because of Owner’s requirement that the other bid/proposal be accepted.

5.7.6 Construction Manager may seek to self-perform portions of the Work identified for self-performance in the bid/proposal strategy. The Construction Manager must submit a bid/proposal for the self-performance work in the same manner as all other trade contractors or Subcontractors. The Owner will determine whether the Construction Manager’s bid/proposal provides the best value for Owner, which determination is final. Construction Manager must perform approved self-performance work in accordance with the same terms and conditions as its other Subcontractors. For payment purposes, the Construction Manager shall account for self-performance work in the same manner as it does all other subcontract costs.

5.7.7 Construction Manager shall identify every Subcontractor it intends to use on the Project, including Subcontractors used for self-performed work, to the Owner in writing at least ten (10) days before entering into any subcontract. Construction Manager shall not use any Subcontractor to which Owner has a reasonable objection. Construction Manager shall not be required to subcontract with any Subcontractor to which it has reasonable objection. Following Owner acceptance of a Subcontractor, that Subcontractor shall not be changed without Owner’s written consent, which shall not be unreasonably withheld.

5.7.8 If a selected trade contractor or subcontractor fails to execute a subcontract after being selected in accordance with this section or defaults in the performance of its work, the Construction Manager may, in consultation with the Owner and without further advertising, fulfill the subcontract requirements itself or select a replacement trade contractor or subcontractor to do so.

5.8 Safety
5.8.1 In accordance with Owner’s Uniform General and Supplementary Conditions, Construction Manager is responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The safety program shall comply with all applicable requirements of the Occupational Safety and Health Act of 1970 and all other applicable federal, state and local laws and regulations and with the requirements of an Owner controlled insurance program, if any.

5.8.2 Construction Manager shall provide recommendations and information to Owner and Project Architect regarding the assignment of responsibilities for safety precautions and programs, temporary Project facilities, and equipment, materials, and services for common use of the Subcontractors. Construction Manager shall verify that appropriate safety provisions are included in the Construction Documents. The existence or creation of any Owner controlled insurance program in connection with the Work shall not lessen or reduce the Construction Manager’s safety responsibilities.

ARTICLE 6 PRE-CONSTRUCTION PHASE FEE

6.1 The Pre-Construction Phase Fee is the total compensation payable to the Construction Manager for the performance of Pre-Construction phase Services, except for Additional Pre-Construction Phase Services approved in advance and in writing by the Owner. The Pre-Construction Phase Fee shall be a lump sum amount based on the CCL established in this Agreement.

6.2 Except as specifically allowed in paragraph 6.4, the Construction Manager shall not be entitled to any increase in the Pre-Construction Phase Fee for any costs, expenses, liabilities or other obligations arising from the performance of Pre-Construction Phase Services.

6.3 Costs associated with the following items are specifically, but not exclusively, in the establishment of the Pre-Construction Phase Fee: profit and profit sharing; general overhead; salaries and labor; housing and relocation; estimating, scheduling and information management systems and software; contract administration; office expenses; printing and copying; consulting fees; legal or accounting fees; cost of money; taxes; insurance premiums and deductibles; bond costs; purchase or rental of equipment; utilities; travel; per diem; fines or penalties; and damage awards.

6.4 If the scope of the Pre-Construction Phase Services is changed materially, the Pre-Construction Phase Fee shall be equitably adjusted. If the CCL is changed materially before acceptance of the GMP Proposal, the Pre-Construction Phase Fee shall be adjusted in proportion to the change in the CCL. There shall be no adjustments in the Pre-Construction Phase Fee following acceptance of the GMP Proposal.

6.5 For Additional Pre-Construction Phase Services that are approved in advance and in writing by the Owner, Construction Manager shall be entitled to additional compensation computed as a:

6.4.1 A pre-established lump sum amount; or

6.4.2 The hourly cost of Construction Manager’s employee’s or consultants who actually perform the Additional Services based on the employee’s Worker Wage Rate or prorated Monthly Salary Rate plus the actual cost of allowable expenses incurred in the performance of the Additional Services plus an overhead and profit markup of ten percent (10%) of the total cost; or
6.4.3 As otherwise agreed to by the parties in advance of performing the Additional Pre-Construction Phase Services.

ARTICLE 7 GUARANTEED MAXIMUM PRICE PROPOSAL

7.1 When the Parties agree that the design of the Project is sufficiently developed and documented to allow detailed pricing of its construction, Construction Manager shall prepare and submit a Guaranteed Maximum Price ("GMP") Proposal to Owner. The GMP Proposal must be prepared in accordance with the guidelines and delivered in the format specified by Owner in the attached exhibits. Owner, at its sole option and discretion, may specify different requirements for the GMP Proposal. Construction Manager shall not withdraw its Guaranteed Maximum Price Proposal for ninety (90) days following submission to the Owner.

7.2 In developing the GMP Proposal, the Construction Manager shall coordinate efforts with the Project Architect to identify qualifications, clarifications, assumptions, exclusions, value engineering and any other factors relevant to establishment of a GMP. The Construction Manager shall review development of the GMP Proposal with the Owner on an ongoing basis to address clarifications of scope and pricing, distribution of contingencies, schedule, assumptions, exclusions, and other matters relevant to the establishment of a GMP.

7.3 The GMP Proposal must include a written description of how it was derived that specifically identifies the clarifications and assumptions made by the Construction Manager in the GMP and the monetary amounts attributable to them. The GMP Proposal shall include, without limitation, a breakdown of Construction Manager's estimated General Conditions Costs and estimated Costs of the Work organized by trade; contingency amounts; the Construction Phase Fee; and the proposed Contract Time, including dates for Notice to Proceed, Substantial Completion and Final Completion.

7.4 The Guaranteed Maximum Price Proposal shall allow for reasonably expected changes and refinements in the Drawings and Specifications through completion of the Construction Documents, except for material changes in scope.

7.5 The GMP Proposal may include a Construction Manager's Contingency amount as allowed under Direct Construction Cost.

7.6 Included with its GMP Proposal, Construction Manager shall provide two complete, bound sets of the drawings, specifications, plans, sketches, instructions, requirements, materials, equipment specifications and other information or documents that fully describe the Project as developed at the time of the GMP Proposal and that are relevant to the establishment of the GMP. The bound supporting documents shall be referenced in and incorporated into the GMP Proposal.

7.7 The GMP Proposal and all supporting documents shall identify and describe all items, assumptions, costs, contingencies, schedules and other matters necessary and relevant for proper execution and completion of the Work and for establishment of the Guaranteed Maximum Price. The GMP Proposal and the supporting documents are complementary and, in the event of an irreconcilable conflict between or among them, the interpretation that provides for the higher quality of material and/or workmanship shall prevail over all other interpretations.
7.8 In submitting the GMP Proposal, the Construction Manager represents that it will provide every item, system or element of Work that is identified, shown or specified in the GMP Proposal or the supporting documents, along with all necessary or ancillary materials and equipment for their complete operating installation, unless specifically excepted by the Owner. Upon Owner's acceptance of the GMP Proposal, the Construction Manager shall not be entitled to any increase in the Guaranteed Maximum Price due to the continued refinement of the Construction Documents or the absence or addition of any detail or specification that may be required in order to complete the construction of the Project as described in and reasonably inferable from the GMP Proposal or the supporting documents used to establish the GMP.

7.9 The GMP Proposal shall adopt and incorporate all of the terms and conditions of this Agreement and all attachments to this Agreement. Any proposed deviation from the terms and conditions of this Agreement must be clearly and conspicuously identified to the Owner in writing and specifically accepted by the Owner. In the event of a conflict between any term of the GMP Proposal that was not clearly and conspicuously identified and approved by the Owner and the terms of this Agreement and its attachments, the terms of the Agreement and its attachments shall control.

7.10 Owner may accept or reject the Guaranteed Maximum Price Proposal or attempt to negotiate its terms with Construction Manager. Upon acceptance by the Owner of the GMP Proposal in writing, both parties shall execute the GMP Proposal and the terms of the GMP Proposal, including the Guaranteed Maximum Price and the supporting documents, shall become part of the Contract between the Owner and the Construction Manager. If the Owner rejects the GMP Proposal or the parties are unable or unwilling to agree on a GMP, the Owner may terminate this Agreement.

7.11 Following Owner acceptance of the GMP Proposal, Construction Manager shall continue to monitor the development of the Construction Documents so that, when complete, the Construction Documents adequately incorporate and resolve all qualifications, assumptions, clarifications, exclusions and value engineering issues identified in the GMP Proposal. During the Construction Documents stage, the Construction Manager and the Project Architect shall jointly deliver a monthly status report to the Owner describing the progress on the incorporation of all qualifications, assumptions, clarifications, exclusions, value engineering issues and all other matters relevant to the establishment of the GMP into the Construction Documents.

7.12 The Construction Manager shall be entitled to an equitable adjustment of the GMP if it is required to pay or bear the burden of any new federal, state, or local tax, or any rate increase of an existing tax, except taxes on income, adopted through statute, court decision, written ruling, or regulation taking effect after acceptance of the GMP Proposal. This equitable adjustment does not apply to tax increases borne solely by Subcontractors.

7.13 The Parties may agree to convert the GMP to a lump sum contract amount at any time after the Construction Manager has received bids or proposals from trade contractors or Subcontractors for the performance of all major elements of the Work. In proposing a lump sum amount, the Construction Manager shall consider the buyout savings, any unused contingency amounts and the trade package contracts that have not been finalized. In preparing a lump sum conversion proposal, the General Contractor must provide the following information:

a. The stage of completion of the Project;
b. The trade packages that have been completely bought out;
c. The trade packages remaining that have not been bought out;
d. A complete line item breakdown of the calculations used to establish a lump sum amount based on the GMP Schedule of Values;

e. An accounting of all savings amounts that are to be returned to the Owner as part of the lump sum calculation; and

f. Any other Project information requested by the Owner.

7.14 The Construction Manager shall document the actual Cost of the Work at buyout as compared to the Guaranteed Maximum Price proposal and shall report this information to the Owner monthly and with Construction Manager’s recommendation for selection of a bid/proposal for each subcontracting package.

ARTICLE 8 CONSTRUCTION PHASE SERVICES

The Construction Phase shall be deemed to commence upon the date specified in a Notice to Proceed issued by Owner after approval of the Guaranteed Maximum Price Proposal and shall continue until Final Completion of all Work. Pre-Construction Phase Services may overlap Construction Phase Services. Construction Manager shall not incur any Subcontractor costs for construction of the Work prior to issuance by Owner of written authorization to commence such Work. The Construction Manager shall perform the following Construction Phase Services.

8.1 Construct the Work in strict accordance with the Construction Documents and as required by the Uniform General and Supplementary General Conditions and Owner’s Specifications within the time required by the Project Schedule approved by Owner.

8.2 Organize and maintain a competent, full-time staff at the Project site with clearly defined lines of authority and communication as necessary to coordinate construction activities, monitor and direct progress of the Work, and further the goals of the Project Team.

8.3 Designate in writing a representative who is responsible for the day-to-day management of the Construction Phase Services. The designated representative shall be the Owner’s primary contact during the Construction Phase and shall be available as required for the benefit of the Project and the Owner. The designated representative shall be authorized to act on behalf of and bind the Construction Manager in all matters related to Construction Phase Services including, but not limited to, execution of Change Orders and Applications for Payment.

8.4 Attend Owner’s regularly scheduled Project progress meetings and fully advise the Project Team of the Project status including schedule, costs, quality and changes.

8.5 In addition to attending Owner’s regularly scheduled Project progress meetings, Construction Manager shall schedule, direct and attend interim progress meetings with other members of the Project Team as required to maintain Project progress. Construction Manager shall record and distribute the minutes of each meeting to each Project Team member. The minutes shall identify critical activities that require action and the dates by which each activity must be completed.

8.6 Coordinate delivery and installation of Owner-procured material and equipment.

8.7 In accordance with Owner’s Standard Uniform General and Supplementary Conditions, provide and pay for all labor, materials, equipment, tools, construction equipment and machinery, transportation, and all other facilities and services necessary for the proper execution and completion of the Work in strict accordance with the requirements of the Construction Documents.
8.8 Obtain building permits and special permits for permanent improvements as required by law or the Construction Documents. Assist Owner or Project Architect in obtaining all approvals required from authorities having jurisdiction over the Project.

8.9 Coordinate, monitor and inspect the work of Subcontractors to ensure conformance with the Construction Documents.

8.10 Be responsible for all construction means, methods, techniques, sequences and procedures, and for coordinating all portions of the Work. The Construction Manager shall keep the Owner informed of the progress and quality of the Work.

8.11 Construction Manager shall promptly correct any defective Work at Construction Manager’s sole expense, unless the Owner specifically agrees to accept the Work.

8.12 Warrant that the materials and equipment provided for the Project will be of good quality and new unless otherwise required or permitted by the Construction Documents; that the construction will be free from faults and defects; and that the construction will conform with the requirements of the Construction Documents. The Construction Manager shall be responsible for correcting Work that does not comply with the Construction Documents at its sole expense without cost to the Owner.

8.13 In accordance with the Uniform General and Supplemental Conditions regarding Record Documents and the Owner’s Project Closeout Specification, the Construction Manager shall maintain and deliver the required documents that describe changes or deviations from the Construction Documents that occurred during construction and that reflect the actual “As Built” conditions of the completed Work.

ARTICLE 9  
OWNER’S RESPONSIBILITIES

9.1 The Owner will designate a Project Architect for the Project.

9.2 The Owner will provide the Preliminary Project Cost and general schedule for the Project. The PPC will include the Construction Cost Limitation, contingencies for changes in the Work during construction, and other costs that are the responsibility of the Owner. The general schedule will set forth the Owner’s plan for milestone dates and completion of the Project.

9.3 The Owner will identify a person as its Owner Designated Representative (“ODR”) who is authorized to act in the Owner’s behalf with respect to the Project. The Owner’s Designated Representative shall examine the documents submitted by the Construction Manager and shall render decisions on behalf of the Owner.

9.4 The Owner will identify a person as its Owner Designated Representative authorized to administer this Agreement on behalf of the Owner, including final determination of fees and costs earned by the Construction Manager and equitable backcharges against the Construction Manager.

9.5 The Owner, at Owner’s cost, will secure the services of surveyors, soils engineers, existing facility surveys, testing and balancing, environmental surveys or other special consultants to develop such additional information as may be necessary for the design or construction of the Project.
9.6 The Owner shall arrange and pay for materials, structural, mechanical, chemical and other laboratory tests as required by the Construction Documents.

9.7 The Owner shall furnish all legal, accounting, auditing and insurance counseling services for itself as may be necessary for the Project.

9.8 The Owner shall furnish required information and services and shall render approvals and decisions as expeditiously as is consistent with reasonable skill and care and the orderly progress of the Construction Manager’s services and of the Work.

9.9 The Owner may designate one or more construction inspectors who shall be given access to the Work as requested or needed. The provision of inspection services by Owner shall not reduce or lessen Construction Manager’s responsibility for the Work. Construction Manager is fully and solely responsible for constructing the Project in strict accordance with the Construction Documents.

9.10 Owner shall have the right to reject any defective Work on the Project. Should Construction Manager refuse or neglect to correct any such Work within a reasonable time after notice, Owner may have the Work corrected and recover all expenses incurred from Construction Manager on demand.

9.11 Owner shall furnish to the Construction Manager the number of Construction Document sets as required by this Agreement.

ARTICLE 10 OWNERSHIP AND USE OF DOCUMENTS

10.1 Drawings, specifications and other documents prepared by the Project Architect, its consultants, or other consultants retained by the Owner for the Project that describe the Work to be executed by the Construction Manager (the “Construction Documents”) are instruments of service and shall remain the property of their authors whether the Project for which they are made is executed or not. The Construction Manager shall be permitted to retain one record set of the Construction Documents. All other copies of the Construction Documents shall be returned to their respective authors or suitably accounted for. The Construction Manager and its Subcontractors are authorized to reproduce and use portions of the Construction Documents as necessary and appropriate for the execution of the Work. The Construction Manager and its Subcontractors shall not use the Construction Documents on any other projects.

10.2 Submission or distribution of the Construction Documents to meet official regulatory requirements or for other purposes in connection with the Project shall not diminish the Project Architect’s or other author’s rights.

ARTICLE 11 TIME

11.1 TIME LIMITS STATED IN THE CONTRACT DOCUMENTS ARE OF THE ESSENCE OF THIS AGREEMENT.

11.2 Unless otherwise approved, the Owner and the Construction Manager shall perform their respective obligations under the Contract as expeditiously as is consistent with reasonable skill and care and the orderly progress of the Work.

11.3 Prior to commencement of the Construction Phase Services and concurrently with submission of the Guaranteed Maximum Price Proposal, the Construction Manager shall submit an up-to-date CPM
Schedule for the performance of Construction Phase Services as specified. The CPM Schedule shall include reasonable periods of time for the Owner’s and Project Architect’s review and approval of shop drawings and submissions and for the approval of other authorities having jurisdiction over the Project.

ARTICLE 12 PAYMENTS

12.1 General Requirements

12.1.1 Each schedule of values submitted with an Application for Payment shall include the originally established value for each work classification line item or subcontract and shall identify any revisions to the costs or cost estimates for each work classification or subcontract. The format and tracking method of the original schedule of values and of all updates shall be subject to approval by the Owner. At all times, the estimated cost of performing the uncompleted and unpaid portion of the Work, including Construction Manager’s overhead and profit, shall not exceed the unpaid balance of the Guaranteed Maximum Price, less retainage on Work previously completed.

12.1.2 Expenses of transportation and overnight living expenses in connection with Owner approved out-of-state travel shall be identified separately in each Application for Payment. All travel must be approved in writing and in advance by Owner to be eligible for payment. Allowable expenses are limited as follows:

12.1.2.1 Travel from Texas to an out-of-state location:
   - Coach class air fare purchased at the lowest reasonably available rate;
   - Lodging and meals for overnight travel limited to the maximum rates allowed in the “Out of State Meals and Lodging Rates” guidelines published by the Texas Comptroller of Public Accounts, plus city and state taxes; and
   - Taxi, mid-size automobile rental expenses, and related costs with applicable taxes.
   - An additional forty (40) percent mark up will be allowed on lodging costs only (not including taxes or meals)

12.1.2.2 Travel to Texas from an out-of-state location:
   - Coach class air fare purchased at the lowest reasonably available rate;
   - Lodging and meals for overnight travel limited to the maximum current State of Texas per diem rate for in-state lodging and meals plus city and state taxes;
   - Taxi, mid-size automobile rental expenses, and related costs with applicable taxes.
   - An additional forty (40) percent mark up will be allowed on lodging costs only (not including taxes).

12.1.2.3 Expenses specifically excluded from reimbursement include telephone charges, FAX services, alcoholic beverages, laundry service, valet service, entertainment expenses and any non-Project related items. Tips included in the per diem rates.

12.1.3 Retainage as specified in the Uniform General and Supplementary Conditions will be withheld from the entire amount approved in an Application for Payment including the Cost of
the Work, General Conditions, and the Construction Manager’s Construction Phase Fee. Retainage will not be withheld from payments for Pre-Construction Phase Services.

12.1.4 Owner is an agency of the State of Texas and materials and services utilized in the construction of the Project may be exempted from state and local taxes. Construction Manager is responsible for taking full advantage of all tax exemptions applicable to the Project. Owner will deduct from the Applications for Payment and from the Request for Final Payment any taxes paid for materials or services that were entitled to tax exemption.

12.1.5 This Agreement is subject to the assessment of liquidated damages against Construction Manager. Amounts assessed as liquidated damages, and other amounts to which Owner is entitled by way of setoff or recovery, may be deducted from any moneys due Construction Manager.

12.1.6 Owner shall have the right to withhold from payments due Construction Manager such sums as are necessary to protect Owner against any loss or damage which may result from negligence by Construction Manager or any Subcontractor or failure of Construction Manager or any Subcontractor to perform their obligations under this Agreement.

12.1.7 Notwithstanding any other contractual provision to the contrary, Owner shall not be obligated to make any payment, to Construction Manager under any of the following circumstances:

12.1.7.1 Construction Manager persistently fails to perform the Work in accordance with the Contract Documents or is otherwise in material breach or default under this Agreement;

12.1.7.2 The payment request includes services that are not performed in accordance with the Construction Documents; provided, however, Owner shall pay for those services performed in accordance with the Construction Documents;

12.1.7.3 The payment request has insufficient documentation to support the amount of payment requested for Project costs; provided, however, Owner shall pay for allowable Project costs for which there is sufficient documentation;

12.1.7.4 Construction Manager is in violation of the Prevailing Wage requirements or has failed to make payments promptly to Subcontractors or other third parties used in connection with any services or materials for which Owner has made payment to Construction Manager;

12.1.7.5 If Owner, in its good faith judgment, determines that the unpaid balance of the GMP is not sufficient to complete the Work in accordance with the Construction Documents;

12.1.7.6 Construction Manager has persistently failed to complete the Work in accordance with the CPM Schedule requirements or if Owner, in its good faith judgment, determines that the remaining Work will not be completed within the contract time;

12.1.7.7 Construction Manager is insolvent, makes a general assignment for the benefit of its creditors or otherwise seeks protection under the laws and regulations of the bankruptcy courts; or
12.1.7.8 Construction Manager fails to obtain, maintain or renew insurance coverage as required by the Agreement.

12.1.8 No partial payment made by the Owner shall constitute, or be construed to constitute, final acceptance or approval of the work to which the partial payment relates or of the documentation provided in support of the partial payment. No partial payment made by the Owner shall constitute, or be construed to constitute, a release of Construction Manager from any of its obligations or liabilities with respect to the Work.

12.1.9 Owner shall have the right to verify and audit the details of Construction Manager's billings, certificates, accountings, cost data, and statements, either before or after payment, by (1) inspecting the books and records of Construction Manager during normal business hours; (2) examining any reports with respect to this Project; (3) interviewing Construction Manager's employees; (4) visiting the Project site; and (5) any other reasonable action. Construction Manager's records shall be kept on the basis of generally accepted accounting principles in accordance with cost accounting standards issued by the Federal Office of Management and Budget Cost Accounting Standards Board and organized by each Application for Payment period.

12.2 Pre-Construction Phase Payments

12.2.1 Payments for Pre-Construction Phase Services shall be made monthly based on the percentage completion of the Construction Manager's required services for each stage of development of the Construction Documents and the procurement of Subcontractor bids/proposals in accordance with the following schedule:

GMP Development Stage 50%
Release of Bid Package #2 subcontracts 50%

12.2.2 All payment requests for Pre-Construction Phase Services shall be submitted on an Application for Payment and Schedule of Values approved by the Owner and includes all required attachments identifying payments to Historically Underutilized Businesses and to all Subcontractors.

12.3 Construction Phase Payments

12.3.1 Payments for Construction Phase Services shall be made as provided for in the Uniform General and Supplementary Conditions and the Owner's Specifications. All payment requests shall be submitted on an Application for Payment with a schedule of values approved by the Owner and include all required attachments identifying payments to Historically Underutilized Businesses and to all Subcontractors. Payment for approved Change Orders shall be made as part of the Construction Manager's Application for Payment. Failure to submit "HUB Progress Assessment Report Documentations of Subcontracted Work" form with each Application for Payment Application will cause rejection of the application by the Owner and its return to the Construction Manager.

12.3.2 The Construction Manager’s Construction Phase Fee shall be shown as a separate line item on the Schedule of Values. Payment of the Construction Manager’s Construction Phase Fee shall be made with each Application for Payment in the same proportion as the percentage completion of the Cost of the Work of the Project.
12.3.3 For General Conditions Costs, Construction Manager’s Application for Payment shall include complete copies of all receipts, invoices with check vouchers or other evidence of payment, payrolls, and any and all other evidence which Owner or its designated representatives shall deem necessary to support the amount requested. This information is subject to audit and payment for these costs is dependant on Owner’s receipt of accurate and complete records of all transactions. Owner may reduce the amount requested for General Conditions Costs in any Application for Payment if the Owner, in its good faith judgment, determines that the unpaid balance of the General Conditions line item in the schedule of values is not sufficient to fund necessary General Conditions Costs for the remainder of the Project.

12.3.4 Pay requests for Subcontractor work included in an Application for Payment shall not exceed the percentage of Work allocated to that Subcontractor for each respective schedule of values work classification which has been actually completed and shall not exceed the total value of the subcontract amount.

12.3.5 Construction Manager’s Request for Final Payment shall not be made until all Work is completed and all requirements of the Contract Documents have been satisfied including, without limitation: delivery to Owner of a complete release of all liens and claims arising out of the Work; written consent of surety to release of final payment; and an affidavit that, to the best of Construction Manager information, knowledge and belief, the release includes and covers all materials and services over which Construction Manager has control and for which a lien could be filed and that all known debts and claims arising from the Project have been satisfied. Alternatively, Construction Manager may, at its sole expense, furnish a bond satisfactory to Owner to indemnify Owner against any lien arising out of the Work. If any lien is asserted against Owner after all payments are made, Construction Manager shall reimburse Owner for all damages and costs Owner may incur in discharging such lien, including all costs or court and reasonable attorneys’ fees, and Owner shall retain all other remedies available to it at law and in equity.

12.3.6 Owner shall have no obligation to make Final Payment until a complete and final accounting of the Direct Construction Cost has been submitted by Construction Manager and has been audited and verified by Owner or Owner’s representatives.

12.3.7 Nothing contained herein shall require the Owner to pay the Construction Manager an aggregate amount for Construction Phase Services that exceeds the Guaranteed Maximum Price or to make any payment if, in the Owner’s belief, the cost to complete the Work would exceed the Guaranteed Maximum Price less previous payments to Construction Manager. The total amount of all Construction Phase payments to the Construction Manager shall not exceed the actual verified Direct Construction Cost for the Project plus the Construction Manager’s Construction Phase Fee.

12.3.8 The acceptance by Construction Manager or Construction Manager’s successors of Final Payment under this Agreement, shall constitute a full and complete release of Owner from any and all claims, demands, and causes of action whatsoever that Construction Manager, its Subcontractors, suppliers and consultants or any of their successors or assigns have or may have against Owner arising from the Project or any provision(s) of this Agreement except for those previously made in writing and identified by Construction Manager as unsettled at the time of the Request for Final Payment.
ARTICLE 13  DIRECT CONSTRUCTION COST

Direct Construction Cost means the sum of the amounts that the Construction Manager actually and necessarily incurs constructing the Work in strict compliance with the Construction Documents. Direct Construction Cost includes only the cost categories set forth in this Article and does not include the Pre-Construction Phase Fees or the Construction Phase Fees unless specifically noted.

References in the Uniform General and Supplementary Conditions to adjustments in “cost” or “costs” mean the Direct Construction Cost.

13.1  General Conditions Costs

Construction Manager is entitled to receive payment for the actual cost of the allowable General Conditions items incurred after receipt of a Notice to Proceed with Construction from the Owner through Substantial Completion of the Project. Construction Manager is not entitled to reimbursement for General Conditions Costs incurred before receipt of the Notice to Proceed. General Conditions Costs incurred after Substantial Completion must be approved in advance by the Owner.

Allowable General Conditions items are identified below and by attached exhibit. These items shall be included in the General Conditions cost amount shown as a line item in the Guaranteed Maximum Price Proposal and as detailed on the schedule of values. Items not specifically included below or in the exhibit will not be allowed as a General Condition costs.

13.1.1  Personnel Costs. The actual Worker Wage Rate for Construction Manager’s hourly employees and the Monthly Salary Rate of Construction Manager’s salaried personnel who are identified to the Owner in advance and in writing but only for the time actually stationed at the Project site with the Owner’s prior consent. The Project Manager’s Monthly Salary Rate may be included in the General Conditions Costs only when the Project Manager is directly managing the Project. All personnel costs are subject to audit to determine the actual cost of the wages, salaries and allowable employer contributions incurred by the Construction Manager for services performed for the Project.

13.1.2  Costs of long-distance telephone calls, telegrams, postage, package delivery and courier service, hardwired telephone service, and reasonable expenses of Construction Manager’s jobsite office if incurred at the Project site and directly and solely in support of the Work.

13.1.3  Costs of materials, supplies, temporary facilities, equipment, and hand tools (except those customarily owned by construction workers), supplied to the Project site by Construction Manager, if such items are fully consumed in the construction of the Work and are included in the list of allowable General Condition Line Items. Cost for used items shall be based on fair market value and may include transportation, installation, and minor maintenance costs, and removal costs. If an item is not fully consumed in the construction of the Work, its cost shall be based on actual cost of the item less its fair market salvage value.

13.1.4  Rental charges for temporary facilities, equipment, and hand tools (except those customarily owned by construction workers), supplied to the Project site by Construction Manager, provided they are included in the list of allowable General Condition Line Items and Owner has approved the rentals and the rental rates in advance and in writing. Rental rates may include transportation, installation, and minor maintenance costs, and removal costs. For tools,
machinery or construction equipment rented directly from the Construction Manager, the rental rate, including freight and delivery costs and all operating expenses except labor, shall be approved in advance by the Owner and shall be in accordance with the "Rental Rate Blue Book for Construction Mobilization Costs" published by Primedia, latest edition, but no higher than the prevailing competitive rates for rental of similar equipment in the Project vicinity.

13.1.5 The aggregate rental cost of any item charged to Owner shall not exceed ninety percent (90%) of the purchase price and maintenance cost of the item. If the anticipated aggregate rental cost for an item of equipment exceeds ninety percent (90%) of the purchase and maintenance price, Construction Manager shall purchase the equipment and turn it over to Owner upon final completion of the Work or, at Owner's option, credit the Owner with the fair market resale value of the item.

13.1.6 Permit and inspection fees that are not subject to exemption.

13.1.7 Premiums for insurance and bonds to the extent directly attributable to this Project.

13.1.8 Governmental sales and use taxes directly attributable to the General Conditions Items that are not subject to exemption. Taxes paid on materials or services that were entitled to tax exemption will not be reimbursed by Owner as Direct Construction Costs.

13.2 Cost of the Work

Construction Manager is entitled to receive payment for the actual cost of the allowable Cost of the Work items incurred after receipt of Owner's written authorization to commence the Construction Phase Work through Final Completion of the Project. Construction Manager is not entitled to reimbursement for Cost of the Work costs incurred before receipt of Owner's written authorization. Cost of the Work includes the following:

13.2.1 Costs of materials and equipment purchased directly by the Construction Manager and incorporated into or consumed in the performance of the Work, including transportation charges, and a reasonable and customary allowance for waste and spoilage. Payment for stored materials is subject to the Uniform General and Supplementary Conditions.

13.2.2 Costs of site debris removal and disposal in accordance with all applicable laws and regulations if not otherwise included in General Conditions.

13.2.3 Payments made to Subcontractors and their vendors or suppliers by Construction Manager for the subcontract work in accordance with the Construction Documents and the requirements of the subcontracts with the Subcontractors, vendors or suppliers.

13.2.4 Payments earned by Construction Manager for self-performed subcontract work, other than General Conditions work, in accordance with the Construction Documents and the terms of this Agreement and approved by the Owner.

13.2.5 Testing fees pursuant to the Uniform General and Supplementary Conditions.

13.2.6 Intellectual property royalties and licenses for items specifically required by the Construction Documents which are, or will be, incorporated into the Work.
13.3 Construction Manager’s Contingency

13.3.1 The Guaranteed Maximum Price Proposal may include a Construction Manager’s Contingency amount to be used to fund increases in the Direct Construction Cost of the Project identified through the refinement, development and completion of the Construction Documents or procurement of the Work.

13.3.2 Any re-allocation of funds from the Construction Manager’s Contingency to cover increases in the Direct Construction Cost must be approved by the Owner in advance and in writing, such approval not to be unreasonably withheld. In written requests to use the Construction Manager’s Contingency, the Construction Manager shall provide detailed documentation of the scope of work affected and the bases for any increases in costs.

13.3.3 The Construction Manager’s Contingency is specifically not to be used for Contractor rework, unforeseen conditions, cost increases caused by lack of coordination or communication with the Project Architect or trade Subcontractors, or to correct errors or omissions in the Construction Documents.

13.3.4 As the Construction Documents are finalized and the Buyout of the Work progresses the Construction Manager’s Contingency amount shall be reduced by mutual agreement of Owner and Contractor. Any balance in the Construction Manager’s Contingency fund remaining at the end of the Project shall be returned to the Owner as savings.

ARTICLE 14 CONSTRUCTION PHASE FEE

The Construction Manager’s Construction Phase Fee is the maximum amount payable to the Construction Manager for any cost or profit expectation incurred in the performance of the Work that is not specifically identified as being eligible for reimbursement by the Owner elsewhere in the Agreement. References in the Uniform General and Supplementary Conditions to Construction Manager’s “overhead” and “profit” mean the Construction Manager’s Construction Phase Fee. The Construction Phase Fee includes, but is not limited to, the following items.

14.1 All profit, profit expectations and costs associated with profit sharing plans such as personnel bonuses, incentives, and rewards; company stock options; or any other like expenses of the Construction Manager

14.2 Salaries of Construction Manager’s officers, project manager(s), estimators, schedulers and all other employees not stationed at the Project site and performing services directly related to the Project.

14.3 Any and all overhead, labor or general expenses of any kind unless specifically allowed under General Conditions. These costs include, but are limited to: costs for the purchase, lease, rental of or allowance for vehicles and their maintenance, radios/communication equipment, jobsite computers and other business equipment, and specialized telephone systems, including cellular/digital phones; trade or professional association dues; cost for relocation of any of the Construction Manager’s personnel; and travel, per diem and subsistence expense of Construction Manager, its officers or employees except as specifically allowed under General Conditions.
14.4 Any financial costs incurred by the Construction Manager including the cost of capital or interest on capital, regardless of whether it is related to the Project, and costs associated with construction warranty reserves.

14.5 Any legal, accounting, professional or other similar costs incurred by the Construction Manager, including costs incurred in connection with the prosecution or defense any dispute, mediation, arbitration, litigation or other such proceeding related to or arising from the Project.

14.6 Any Federal and/or State income and franchise taxes paid by Construction Manager. Any fines, penalties, sanctions or other levies assessed by any governmental body against Construction Manager.

14.7 Any cost arising out of a breach of this Contract or the fault, failure or negligence of Construction Manager, its Subcontractors, or any person or entity for whom they may be liable. These costs include, without limitation: costs to remedy defective, rejected, or nonconforming work, materials or equipment; costs due to failure to coordinate the Work or meet CPM Schedule milestones; costs arising from Construction Manager’s contractual indemnification obligations; liquidated or actual damages imposed by Owner for failure to complete the Work within the Contract Time; costs due to the bankruptcy or insolvency of any Subcontractor; and damage or losses to persons or property.

14.8 The cost of any and all insurance deductibles payable by the Construction Manager and costs due to the failure of Construction Manager or any Subcontractor to procure and maintain insurance as and to the extent required by the Contract Documents.

14.9 Any and all costs that would cause the Guaranteed Maximum Price, minus the amounts allocated in the GMP for Owner’s Contingency and Owner’s Special Cash Allowance, to be exceeded.

14.10 Any and all costs not specifically identified as an element of the Direct Construction Cost.

ARTICLE 15 CONTRACT SAVINGS, ALLOWANCES, REBATES & REFUNDS

15.1 If the allowable, final, verified, audited amount of the cost of General Conditions, Cost of the Work, Allowance items and Construction Manager’s Contingency is less than the amount established for each of those categories in the originally approved Guaranteed Maximum Price Proposal, the entire difference shall be credited to the Owner as savings and the final contract amount shall be adjusted accordingly. When buyout of the Project is at least 85% complete, the Owner may recognize any savings achieved to that point by issuing a deductive change order for the saved amount.

15.2 Items to be provided for through Owner’s Special Cash Allowances shall be clearly identified in the Construction Documents and the Guaranteed Maximum Price proposal. The Cost of the Work included in the Allowances shall be determined in accordance with the Uniform General and Supplementary Conditions. Any claim by the Construction Manager for an adjustment to an Allowance amount included in the Guaranteed Maximum Price based on the cost of Allowance work shall be made within a reasonable time after the issuance of the Construction Documents for the Allowance items. The Construction Manager shall not be entitled to any increase in its Construction Phase Fee for increases to Allowance amounts that were initially based on estimates provided by the Construction Manager. Owner shall be entitled to retain 100% of the balance of any unused Allowance amount.

15.3 The Owner shall be entitled to deduct amounts for the following items from any Application for Payment or from the Request for Final Payment submitted by the Construction Manager:
15.3.1 The fair market value of all tools, surplus materials, construction equipment, and temporary structures that were charged to the Work (other than rental items) but were not consumed during construction or retained by the Owner. Upon completion of the Work or when no longer required, Construction Manager shall either credit the Owner for the fair market value (as approved by the Owner) for all surplus tools, construction equipment and materials retained by the Construction Manager or, at Owner's option, use commercially reasonable efforts to sell the surplus tools, construction equipment and materials for the highest available price and credit the proceeds to the Owner's account.

15.3.2 Discounts earned by the Construction Manager through advance or prompt payments funded by the Owner. The Construction Manager shall obtain all possible trade and time discounts on bills for material furnished, and shall pay bills within the highest discount periods. The Construction Manager shall purchase materials for the Project in quantities that provide the most advantageous prices to the Owner.

15.3.3 Rebates, discounts, or commissions obtained by the Construction Manager from material suppliers or Subcontractors, together with all other refunds, returns, or credits received for materials, bond premiums, insurance and sales taxes.

15.3.4 Deposits made by Owner and forfeited due to the fault of the Construction Manager.

15.3.5 Balances remaining on any Allowances, the Construction Manager's Contingency, or any other identified contract savings.

15.4 Owner shall be entitled to recover any savings realized between the Guaranteed Maximum Price and the buyout price for subcontracting work, provided however, that Construction Manager may use such savings to offset other buyout packages that exceed the amounts identified in the initial Guaranteed Maximum Price, so long as the total Cost of Work proposed in the Guaranteed Maximum Price does not increase.

15.5 Owner shall be entitled to recognize and recover 100% of any savings identified by cost review or audit at any time, before or after Final Payment.

ARTICLE 16 PRE-EXISTING CONDITIONS & DESIGN ERRORS AND OMISSIONS

16.1 The Construction Manager acknowledges that it has been provided unrestricted access to the existing improvements and conditions on the Project site and that it has thoroughly investigated those conditions. Construction Manager's investigation was instrumental in preparing its Guaranteed Maximum Price Proposal for the Work. Construction Manager shall not make or be entitled to any claim for any adjustment to the Contract Time or the Contract Sum for Pre-Construction Phase Services or for Construction Phase Services arising from Project conditions that Construction Manager discovered or, in the exercise of reasonable care, should have discovered in Construction Manager's investigation.

16.2 The Construction Manager acknowledges that as part of its Pre-Construction Phase Services it shall participate in the development and review of the Construction Documents. Construction Manager's participation in the design development process will be instrumental in preparing its Guaranteed Maximum Price Proposal for the Work. Before submitting its Guaranteed Maximum Price Proposal, the Construction Manager shall review the drawings, specifications and other Construction Documents and
notify the Owner of any errors, omissions or discrepancies in the documents of which it is aware. Construction Manager shall not make or be entitled to any claim for any adjustment to the Contract Time or the Contract Sum for errors or omissions in the Construction Documents that Construction Manager discovered or, in the exercise of reasonable care, should have discovered in Construction Manager’s Pre-Construction Phase design review process that Construction Manager did not bring to the attention of the Owner and the Project Architect in a timely manner.

ARTICLE 17 BONDS AND INSURANCE

17.1 Upon execution of this Agreement, Construction Manager shall provide a security bond on the form provided by the Owner in the amount of 5% of the Construction Cost Limitation. The surety for a security bond shall meet the same requirements as set forth for payment and performance bonds.

17.2 Upon acceptance by the Owner of a Guaranteed Maximum Price Proposal, Construction Manager shall provide performance and payment bonds on forms prescribed by Owner and in accordance with the requirements set forth in the Uniform General and Supplementary Conditions. The penal sum of the payment and performance bonds shall be equal to the Guaranteed Maximum Price. If construction is phased or staged with different Guaranteed Maximum Prices established at different times, the penal sum of the bonds shall be increased at the start of each stage or phase based on the cumulative total value of all Guaranteed Maximum Prices in effect.

17.3 In the event that the Owner implements an Owner Controlled Insurance Program (OCIP), the Construction Manager will be required to provide the following insurance coverages:

17.3.1 Pre-Construction Phase: Provide those coverages specified above for the Pre-Construction Phase. OCIP does not provide coverages during the Pre-Construction Phase.

17.3.2 Construction Phase: Provide Automobile Liability, and Owner’s Protective Liability and Builder’s Risk, as set forth in the Uniform General and Supplementary Conditions.

17.3.3 Refer to the Owner’s Project Insurance (ROCIP) specification for a complete listing of coverages provided by OCIP.

17.4 The Construction Manager shall not commence work under the Agreement until it has obtained all required insurance and until evidence of the required insurance has been reviewed and approved by the Owner. Owner’s review of the insurance shall not relieve nor decrease the liability of the Construction Manager. Prior to commencing any work under this Agreement, Construction Manager shall provide evidence of the following insurance coverages:

17.4.1 Pre-Construction Phase: Employer’s Liability, Workers’ Compensation, Comprehensive General Liability and Comprehensive Automobile Liability in the amounts as set forth in the Uniform General and Supplementary Conditions.

17.4.2 Construction Phase: In addition to the coverages required during the Pre-Construction Phase, Builder’s Risk and Owner’s Protective Liability in the amounts as set forth in the Uniform General and Supplementary Conditions.

17.4.3 Prior to commencing any construction work, Construction Manager shall provide evidence of Builder’s Risk coverage as set forth in the Uniform General and Supplementary
Conditions, which coverage shall remain in full force and effect throughout the term of the Project and shall be increased as necessary for each separate bid package, phase, change order, or Stage of construction prior to the commencement of construction for that package, phase, or Stage.

17.4.4 Construction Manager shall include required insurance information in trade packages and indicate on bid/proposal forms the insurance that bidders/proposers are to include in their base proposals.

17.5 The Construction Manager shall not cause or allow any of its required insurance to be canceled nor permit any insurance to lapse during the term of the Agreement or as required in the Agreement. If the Construction Manager fails to obtain, maintain or renew any insurance required by the Agreement, the Owner may obtain insurance coverage directly and recover the cost of that insurance from the Construction Manager.

17.6 The Owner reserves the right to review the insurance requirements set forth in this Article during the effective period of the Agreement and to make reasonable adjustments to the insurance coverages and their limits when deemed necessary and prudent by the Owner based upon changes in statutory law, court decisions, or the claims history of the industry as well as the Construction Manager.

17.7 The Owner shall be entitled, upon request, and without expense, to receive complete copies of the policies with all endorsements and may make any reasonable requests for deletion, or revision or modification of particular policy terms, conditions, limitations, or exclusions, except where policy provisions are established by law or regulation binding upon the Parties or the underwriter of any of such policies. Damages caused by the Construction Manager and not covered by insurance shall be paid by the Construction Manager.

17.8 The cost of premiums for any additional insurance coverage desired by the Construction Manager in excess of that required by this Agreement, the Uniform General and Supplementary Conditions, or the Contract Documents shall be borne solely by the Construction Manager out of its fees and not included in the GMP Proposal as a Direct Construction Cost.

17.9 OCIP Insured Projects.

17.9.1 In the event that the Owner implements an Owner Controlled Insurance Program (OCIP) for the Project, Construction Manager will provide the required Pre-Construction Phase insurance for the Project and additional Construction Phase insurance coverages as required by the OCIP plan.

17.9.2 Construction Manager's GMP Proposal shall not include the cost of premiums for insurance coverage provided through the OCIP. The GMP Proposal shall only include the cost of premiums of all other insurance required by the Contract Documents.

17.9.3 The cost of premiums for any additional insurance coverage desired by the Construction Manager in excess of that required by this Agreement, the Uniform General and Supplementary Conditions, or the Contract Documents shall be borne solely by the Construction Manager out of its fees and not included in the GMP Proposal as a Direct Construction Cost.
17.9.4 Construction Manager shall include required OCIP insurance information in trade packages and indicate on bid/proposal forms the insurance that bidders/proposers are to and are not to include in their base proposals.

17.9.5 During construction, Owner may audit the Subcontractors' labor hours to determine actual insurance costs.

ARTICLE 18 DISPUTE RESOLUTION

All disputes against the Owner that arise from this Agreement or the Project shall be resolved in accordance with the procedures and limitations of Texas Government Code Chapter 2260 and Article XXVI of the Uniform General and Supplementary Conditions. The Owner designates the Associate Vice President of Facility Services as its officer for examining, negotiating and resolving claims and counterclaims under Chapter 2260.

ARTICLE 19 PROJECT TERMINATION AND SUSPENSION

19.1 This Agreement may be terminated during the Pre-Construction Phase by either party upon fifteen (15) days written notice should the other party fail substantially to perform in accordance with its terms through no fault of the party initiating the termination and breach is not cured or an acceptable plan to cure the breach is not established within the fifteen (15) day period.

19.2 This Agreement may be terminated by the Owner during the Pre-Construction Phase upon at least three (3) days written notice to the Construction Manager in the event that the Project is to be temporarily or permanently abandoned.

19.3 This Agreement may be terminated by the Owner at the GMP Proposal stage upon at least three (3) days written notice to the Construction Manager in the event that the parties are unable or unwilling to agree on a GMP Proposal.

19.4 In the event of termination that is not the fault of the Construction Manager, the Construction Manager shall be entitled to compensation for all services performed to the termination date provided, however, Construction Manager has delivered to Owner such statements, accounts, reports and other materials as required together with all reports, documents and other materials prepared by Construction Manager prior to termination. Upon such payment, Owner shall have no further obligation to the Construction Manager.

19.5 Termination of this Agreement shall not relieve Construction Manager or any of its employees, subcontractors, or consultants of liability for violations of this Agreement or for any act or omission, or negligence, of Construction Manager related to the Project. In the event of a termination, Construction Manager hereby consents to employment by Owner of a substitute Construction Manager to complete the services under this Agreement.

19.6 In the event of termination, Owner shall have the right to use any documents or other materials prepared for the Project and the ideas and designs they contain for the completion of the services described by this Agreement, for completion of the Project, or for any other purpose.
19.7 If the Project is suspended or abandoned in whole or in part for more than ninety (90) consecutive days during the Pre-Construction Phase, the Construction Manager shall be compensated for all services performed prior to receipt of written notice from the Owner of such suspension or abandonment. If the Project is resumed after being suspended for more than ninety (90) consecutive days, the Construction Manager’s compensation for Pre-Construction Services shall be equitably adjusted if, in the Owner’s reasonable opinion, such adjustment is warranted.

ARTICLE 20 INDEMNITY

20.1 SEE ARTICLE 7 OF THE UNIFORM GENERAL AND SUPPLEMENTAL CONDITIONS FOR CONSTRUCTION MANAGER’S GENERAL INDEMNIFICATION OBLIGATIONS.

20.2 CONSTRUCTION MANAGER SHALL PROTECT AND INDEMNIFY THE OWNER FROM AND AGAINST ALL CLAIMS, DAMAGES, JUDGMENTS AND LOSSES ARISING FROM INFRINGEMENT OR ALLEGED INFRINGEMENT OF ANY UNITED STATES PATENT, OR COPYRIGHT THAT ARISE OUT OF ANY OF THE WORK PERFORMED BY THE CONSTRUCTION MANAGER OR THE USE BY CONSTRUCTION MANAGER, OR BY OWNER AT THE DIRECTION OF CONSTRUCTION MANAGER, OF ANY ARTICLE OR MATERIAL. UPON BECOMING AWARE OF A SUIT OR THREAT OF SUIT FOR PATENT OR COPYRIGHT INFRINGEMENT, OWNER SHALL PROMPTLY NOTIFY CONSTRUCTION MANAGER AND CONSTRUCTION MANAGER SHALL BE GIVEN FULL OPPORTUNITY TO NEGOTIATE A SETTLEMENT. CONSTRUCTION MANAGER DOES NOT WARRANT AGAINST INFRINGEMENT BY REASON OF OWNER’S OR PROJECT ARCHITECT’S DESIGN OF ARTICLES OR THEIR USE IN COMBINATION WITH OTHER MATERIALS OR IN THE OPERATION OF ANY PROCESS. IN THE EVENT OF LITIGATION, OWNER AGREES TO COOPERATE REASONABLY WITH CONSTRUCTION MANAGER AND PARTIES SHALL BE ENTITLED, IN CONNECTION WITH ANY SUCH LITIGATION, TO BE REPRESENTED BY COUNSEL AT THEIR OWN EXPENSE.

20.3 The indemnities contained herein shall survive the termination of this Agreement for any reason whatsoever.

ARTICLE 21 SPECIAL WARRANTIES

21.1 Notwithstanding anything to the contrary contained in this Agreement, Owner and Construction Manager agree and acknowledge that Owner is entering into this Agreement in reliance on Construction Manager’s represented expertise and ability to provide construction management services. Construction Manager agrees to use its best efforts, skill, judgment, and abilities to perform its obligations and to further the interests of Owner in accordance with Owner’s requirements and procedures.

21.2 The Construction Manager represents, and agrees that it will perform its services in accordance with the usual and customary standards of Construction Manager’s profession or business and in compliance with all applicable national, federal, state, municipal, laws, regulations, codes, ordinances, orders and with those of any other body having jurisdiction over the Project. Construction Manager agrees to bear the full cost of correcting Construction Manager’s negligent or improper work and services, those of its consultants, and any harm caused by the negligent or improper work or services.

21.3 The Construction Manager's duties shall not be diminished by any approval by Owner nor shall the Construction Manager be released from any liability by any approval by Owner, it being understood that the Owner is ultimately relying upon the Construction Manager’s skill and knowledge in performing the services required hereunder.
21.4 The Construction Manager represents and agrees that all persons connected with the Construction Manager directly in charge of its services are duly registered and/or licensed under the laws, rules and regulations of any authority having jurisdiction over the Project if registration is required.

21.5 The Construction Manager represents and agrees to advise Owner of anything of any nature in any drawings, specifications, plans, sketches, instructions, information, requirements, procedures, and other data supplied to the Construction Manager (by the Owner or any other party) that is, in its opinion, unsuitable, improper, or inaccurate for the purposes for which the document or data is furnished.

21.6 The Construction Manager represents and agrees to perform its services under this Agreement in an expeditious and economical manner consistent with good business practices and the interests of Owner.

21.7 Construction Manager represents and agrees that there are no obligations, commitments, or impediments of any kind that will limit or prevent performance of its obligations under this Agreement.

21.8 Construction Manager represents and agrees that the individual executing this Agreement on behalf of Construction Manager has been duly authorized to act for and to bind Construction Manager to its terms.

21.9 Except for the obligation of Owner to pay Construction Manager certain fees, costs, and expenses pursuant to the terms of this Agreement, Owner shall have no liability to Construction Manager or to anyone claiming through or under Construction Manager by reason of the execution or performance of this Agreement. Notwithstanding any obligation or liability of Owner to Construction Manager, no present or future partner or affiliate of Owner or any agent, officer, director, employee, or regent of Owner, Midwestern State University, or anyone claiming under Owner has or shall have any personal liability to Construction Manager or to anyone claiming through or under Construction Manager by reason of the execution or performance of this Agreement.

ARTICLE 22 CERTIFICATION OF NO ASBESTOS CONTAINING MATERIALS OR WORK

22.1 The Construction Manager shall provide a certification statement, included with each materials submittal, stating that no asbestos containing materials or work is included within the scope of the proposed submittal.

22.2 The Construction Manager shall ensure that Texas Department of Health licensed individuals, consultants or companies are used for any required asbestos work including asbestos inspection, asbestos abatement plans/specifications, asbestos abatement, asbestos project management and third-party asbestos monitoring.

22.3 The Construction Manager shall provide at Substantial Completion, a notarized affidavit to the Owner and the Architect stating that no asbestos containing materials or work was provided, installed, furnished or added to the Project.

22.4 The Construction Manager shall take whatever measures he deems necessary to insure that all employees, suppliers, fabricators, materialmen, subcontractors, or their assigns, comply with this requirement.
22.5 All materials used on this Project shall be certified as non Asbestos Containing Building Materials (ACBM). The Construction Manager shall insure compliance with the following acts from all of his subcontractors and assigns:

22.5.1 Asbestos Hazard Emergency Response Act (AHERA—40 CFR 763-99 (7));

22.5.2 National Emission Standards for Hazardous Air Pollutants (NESHAP—EPA 40 CFR 61, National Emission Standard for Asbestos;

22.5.3 Texas Asbestos Health Protection Rules (TAHRP—Tex. Admin. Code Title 25, Part 1, Ch. 295C, Asbestos Health Protection

22.6 Every subcontractor shall provide a notarized statement that no ACBM has been used, provided, or left on this Project.

22.7 The Construction Manager shall provide, in hard copy and electronic form, all necessary material safety data sheets (MSDS) of all products used in the construction of the Project to the Texas Department of Health licensed inspector or Project Architect or Engineer who will compile the information from the MSDS and, finding no asbestos in any of the product, make a certification statement.

22.8 At Final Completion the Construction Manager shall provide a notarized certification statement per TAC Title 25 Part 1, Ch. 295.34, par. c.1 that no ACBM was used during construction of the Project.

ARTICLE 23 MISCELLANEOUS PROVISIONS

23.1 Assignment. This Agreement is a personal service contract for the services of Construction Manager, and Construction Manager’s interest in this Agreement, duties hereunder and/or fees due hereunder may not be assigned or delegated to a third party.

23.2 Records of expenses pertaining to Additional Services and services performed on the basis of a Worker Wage Rate or Monthly Salary Rate shall be kept on the basis of generally accepted accounting principles and in accordance with cost accounting standards promulgated by the Federal Office of Management and Budget Cost Accounting Standards Board and shall be available for audit by the Owner or the Owner’s authorized representative on reasonable notice.

23.3 Texas Family Code Child Support Certification. Pursuant to Section 231.006, Texas Family Code, Construction Manager certifies that it is not ineligible to receive the award of or payments under this Agreement and acknowledges that this Agreement may be terminated and payment may be withheld if this certification is inaccurate.

23.4 Eligibility Certification. Pursuant to Section 2155.004, Texas Government Code, Construction Manager certifies that the individual or business entity named in this Agreement is not ineligible to receive the award of or payments under this Agreement and acknowledges that this Agreement may be terminated and payment withheld if this certification is inaccurate.

23.5 Franchise Tax Certification. A corporate or limited liability company Construction Manager certifies that it is not currently delinquent in the payment of any Franchise Taxes due under Chapter 171 of the Texas Tax Code, or that the corporation or limited liability company is exempt from the payment of
such taxes, or that the corporation or limited liability company is an out-of-state corporation or limited liability company that is not subject to the Texas Franchise Tax, whichever is applicable.

23.6 Payment of Debt or Delinquency to the State. Pursuant to Sections 2107.008 and 2252.903, Texas Government Code, Construction Manager agrees that any payments owing to Construction Manager under this Agreement may be applied directly toward any debt or delinquency that Construction Manager owes the State of Texas or any agency of the State of Texas regardless of when it arises, until such debt or delinquency is paid in full.

23.7 Entire Agreement; Modifications. This Agreement supersedes all prior agreements, written or oral, between Construction Manager and Owner and shall constitute the entire Agreement and understanding between the parties with respect to the Project. This Agreement and each of its provisions shall be binding upon the parties and may not be waived, modified, amended or altered except by a writing signed by Construction Manager and Owner.

23.8 Captions. The captions of paragraphs in this Agreement are for convenience only and shall not be considered or referred to in resolving questions of interpretation or construction.

23.9 Governing Law and Venue. This Agreement and all of the rights and obligations of the parties and all of the terms and conditions shall be construed, interpreted and applied in accordance with and governed by and enforced under the laws of the State of Texas without reference to its conflicts of law provisions. The county where the Project is located shall be the sole place of venue for any legal action arising from or related to this Agreement or the Project in which the Owner is a party.

23.10 Waivers. No delay or omission by either party in exercising any right or power arising from non-compliance or failure of performance by the other party with any of the provisions of this Agreement shall impair or constitute a waiver of any such right or power. A waiver by either party of any covenant or condition of this Agreement shall not be construed as a waiver of any subsequent breach of that or of any other covenant or condition of the Agreement.

23.11 Binding Effect. This Agreement shall be binding upon and inure to the benefit of the parties and their respective permitted assigns and successors.

23.12 Appointment. Owner hereby expressly reserves the right from time to time to designate by notice to Construction Manager a representative(s) to act partially or wholly for Owner in connection with the performance of Owner's obligations. Construction Manager shall act only upon instructions from the designated representative(s) unless otherwise specifically notified to the contrary.

23.13 Records. Records of Construction Manager's costs, reimbursable expenses pertaining to the Project and payments shall be available to Owner or its authorized representative during business hours and shall be retained for four (4) years after final Payment or abandonment of the Project, unless Owner otherwise instructs Construction Manager in writing.

23.14 Notices. All notices, consents, approvals, demands, requests or other communications relied on by the parties shall be in writing. Written notice shall be deemed to have been given when delivered in person to the designated representative of the Construction Manager or Owner for whom it is intended; or sent by U. S. Mail to the last known business address of the designated representative; or transmitted by fax machine to the last known business fax number of the designated representative. Mail notices are deemed effective upon receipt or on the third business day after the date of mailing, whichever is sooner. Fax notices are deemed effective the next business day after faxing.
23.15 Severability. Should any term or provision of this Agreement be held invalid or unenforceable in any respect, the remaining terms and provisions shall not be affected and this Agreement shall be construed as if the invalid or unenforceable term or provision had never been included.

23.16 Illegal Dumping. The Construction Manager shall ensure that it and all of its Subcontractors and assigns prevent illegal dumping of litter in accordance with Title 5, Texas Health and Safety Code, Chapter 365.

23.17 Ethics Matters/No Financial Interest. Contractor and its employees, agents, representatives and subcontractors have read and understand University’s Conflicts of Interest Policy, University’s Standards of Conduct Guide, and applicable state ethics laws and rules. Neither Contractor nor its employees, agents, representatives or subcontractors will assist or cause University employees to violate University’s Conflicts of Interest Policy, provisions described by University’s Standards of Conduct Guide, or applicable state ethics laws or rules. Contractor represents and warrants that no member of the Board has a direct or indirect financial interest in the transaction that is the subject of this Agreement.

ARTICLE 24 COMPENSATION

24.1 Construction Cost Limitation

The anticipated Construction Cost Limitation for the Project at the time this Agreement was executed is:

24.2 Pre-Construction Phase Fee

24.2.1 For Pre-Construction Phase Services, Owner shall pay Construction Manager a Pre-Construction Phase Fee in the total stipulated amount of

24.3 Construction Phase Fee

24.3.1 For Construction Phase Services, Owner shall pay Construction Manager a stipulated Construction Phase Fee equal to of the Construction Cost Limitation for the Project.
24.3.2 Based on the anticipated CCL established at the time of this Agreement, the Construction Phase Fee would be the total stipulated amount of:

24.3.3 If the Owner agrees to an increase in the Guaranteed Maximum Price during the Construction Phase, the Construction Phase Fee shall be equitably adjusted by applying the percentage established in paragraph 24.3.1 to the amount of the increase in the GMP.

24.3.4 The percentage rate established in paragraph 24.3.1 of this Agreement for calculation of the Construction Phase Fee cannot be increased except with the express written approval of the Associate Vice President of Facility Services.

24.3.5 If the Owner agrees to any increases in the Construction Cost Limitation during the Construction Phase without increasing the GMP (for example, change orders funded by Owner's Special Cash Allowance or Owner's Construction Contingency) the Construction Manager's fee for these increases shall be calculated accordance with the provisions of the Uniform General and Supplementary Conditions for Change Orders.

24.4 Limitation on General Condition Costs

24.4.1 The maximum allowable amount of General Conditions Costs payable to the Construction Manager during the Construction Phase of the Project shall not exceed of the Construction Cost Limitation for the Project.

24.4.2 Based on the anticipated CCL established at the time of this Agreement, the maximum allowable amount of General Conditions Costs would be the total amount of:

24.4.3 If the Owner agrees to an increase in the Guaranteed Maximum Price during the Construction Phase the maximum allowable amount of General Conditions Costs shall be equitably adjusted by applying the percentage established in paragraph 24.4.1 to the amount of the increase in the GMP.

24.4.4 The percentage rate established in paragraph 24.4.1 of this Agreement for calculation of the maximum allowable amount of General Conditions Costs cannot be increased except with the express written approval of the Associate Vice President of Facility Services.

24.4.5 If the Owner agrees to any increases in the Construction Cost Limitation during the Construction Phase without increasing the GMP (for example, change orders funded by Owner's Special Cash Allowance or Owner's Construction Contingency) the allowable General Conditions Costs for these increases shall be calculated accordance with the provisions of the Uniform General and Supplementary Conditions for Change Orders.
ARTICLE 25 OTHER TERMS AND CONDITIONS

25.1 Time of Completion

25.1.1 The anticipated date for achieving Substantial Completion of the Project at the time this Agreement was executed is:

October 14, 2016. Final Completion shall be no later than November 15, 2016.

25.1.2 The Construction Phase shall be deemed to commence on the date specified in a Notice to Proceed issued by Owner after approval of the Guaranteed Maximum Price Proposal.

25.1.3 The Construction Manager shall achieve Substantial Completion of the Work and Final Completion of the Work on or before the dates agreed to in the Guaranteed Maximum Price Proposal, subject to time extensions granted by Change Order.

25.1.4 The times set forth for completion of the work in the Notice to Proceed with Construction and the Guaranteed Maximum Price Proposal are an essential element of the Agreement. The Owner may elect, at its option, to stage or “fast-track” portions of the work. The Owner shall issue a separate Notice to Proceed or Change Order for each such stage and each such stage shall have a separate substantial completion date and a separate liquidated damages amount.

25.2 Liquidated Damages

25.2.1 For each consecutive calendar day after the Substantial Completion Date that the Work is not substantially completed, the Owner may deduct the amount of:

No Liquidated Damages

from any money due or that becomes due the Construction Manager, not as a penalty but as liquidated damages representing the parties' estimate at the time of contract execution of the damages that the Owner will sustain for late completion. The damages are calculated daily based on the availability of the facility to be fully occupied beginning at 6:00 AM on the day the damages are to be assessed.

25.2.2 The parties stipulate and agree that calculating Owner's actual damages for late completion of the Project would be impractical, unduly burdensome, and cause unnecessary delay and that the amount of daily liquidated damages set forth is reasonable.

25.3 Estimated Construction Cost Reports

Construction Manager shall prepare and update an Estimated Construction Cost report as required by paragraph 4.2.3.1 at the

fifty percent (50%) and the one hundred percent (100%) completion stages during the schematic, design development and construction documents phases of the Pre-Construction Services.
25.4 Notices

Notices of claims or disputes or other legal notices required by this Agreement shall be sent to the following persons at the indicated locations.

If to Owner: Mr. Kyle Owen Associate Vice President Facility Services
Midwestern State University
3410 Taft Blvd.
Wichita Falls, Texas 76308
Fax No.940-397-4530

With Copies to: Mr. Stephen Shelley Director of Purchasing/Contract Manager
Midwestern State University
3410 Taft Blvd.
Wichita Falls, Texas 76308
Fax No.940-397-4530

If to Construction Manager: Mr. Sammy Martin President
Buford-Thompson Company LLC
1450 N. Jim Wright Freeway
White Settlement, Texas 76108
Tel No.817-467-4981

The parties may make reasonable changes in the person or place designated for receipt of notices upon advance written notice to the other party.

25.5 Party Representatives

25.5.1 The Owner’s Designated Representative authorized to act in the Owner’s behalf with respect to the Project is:

Name: Mr. Kyle Owen
Title: Associate Vice President for Facilities Services

25.5.2 The Construction Manager’s designated representative authorized to act on the Construction Manager’s behalf and bind the Construction Manager with respect to the Project is:

Name: Mr. Sammy Martin
Title: President

25.5.3 The parties may make reasonable changes in their designated representatives upon advance written notice to the other party and in accordance with Paragraph 4.8.
25.6 Construction Document Sets

The Project Architect shall coordinate the printing, binding and distribution of the initial issuance of all construction documents to all Subcontractor proposers requesting documents in order to provide proposals to the Construction Manager. A minimum of twenty-five (25) sets will be furnished at the expense of the Owner. The Construction Manager shall utilize all construction documents returned to the Project Architect from the Subcontractor proposers.

25.7 OCIP Insured Project

The Owner has/has not elected to implement an Owner Controlled Insurance Program (OCIP) for this Project. Refer to Article 18.8 for specific coverages required.

25.8 List of Exhibits

The following exhibits are fully incorporated into this Agreement by reference:

Exhibit A -- Uniform General and Supplementary Conditions
Exhibit B -- Owner's Specifications
Exhibit C -- Allowable General Conditions Line Items
Exhibit D -- Guaranteed Maximum Price Proposal Form
Attachment 1 to Exhibit D -- Guidelines for the Preparation of the GMP
Attachment 2 to Exhibit D -- Payment and Performance Bonds
Exhibit E -- Security Bond
Exhibit F -- Construction Manager's Personnel and Monthly Salary Rate
Exhibit G -- Constructability Implementation Program
Exhibit H -- Policy on Utilization, Historically Underutilized Businesses
Exhibit I -- HUB Subcontracting Plan for Pre-Construction Phase Services
Exhibit J -- Additional Services Proposal
BY SIGNING BELOW, the Parties have executed and bound themselves to this Agreement as of the day and year first above written.

MIDWESTERN STATE UNIVERSITY

By: [Signature]

Dr. Marilyn Fowl
Vice President Business Affairs & Finance

Date: 2/4/15

BUFORD THOMPSON COMPANY

By: [Signature]

Starky G. Chance, President

(name and title typed)

Date: 2/8/15

MIDWESTERN STATE UNIVERSITY

By: [Signature]

Dr. Jesse Rogers
President

Date: 2/19/15
EXHIBIT A

UNIFORM GENERAL AND SUPPLEMENTARY CONDITIONS

To review the following go to the below listed link:
2005 Uniform General Conditions for Construction Contracts
Special Conditions

http://mwsu.edu/purchasing/contract-management
EXHIBIT B
OWNER’S SPECIFICATIONS

Design specifications are being developed by project architect.

The Mass Communications Department currently occupies portions of the Fain Fine Arts (FFA) building which is not sufficient for their needs. A programming effort was completed in the fall of 2014 which defined an expansion to FFA with a new two-story, 18,500 GSF addition to the southeast corner of FFA; the programming effort will not be repeated by the architect for this project.

Project Objectives

The objectives of this Mass Communications project are as follows:

- To provide additional and affordable academic space for the Mass Communications Department.
- To meet or exceed present MSU standards for campus academic space.
- Exterior facades and interior design should match the architectural character of existing buildings on campus, in particular, Fain Fine Arts.
- Utilize recent programming efforts which identified spaces and a layout for a production television studio, control room, staff offices, editing bays, equipment storage, a broadcast lab, news room, interview room, photo studio, journalism lab, lecture classroom, two conference rooms, and a break room.
- The construction for the addition to FFA will consist of a structural steel frame building with concrete floors, brick masonry, aluminum windows, storefront, and curtain wall exterior.
- The design will not include any parking facilities.
- LEED certification is not an objective of the project, although incorporation of LEED initiatives in the overall project is desired. Any sustainability issues/designs are to be included as part of the architecture firm’s responsibilities.
EXHIBIT C
ALLOWABLE GENERAL CONDITIONS LINE ITEMS
EXHIBIT E
SECURITY BOND
EXHIBIT F
CONSTRUCTION MANAGER’S PERSONNEL AND MONTHLY SALARY RATE
EXHIBIT H
POLICY ON UTILIZATION, HISTORICALLY UNDERUTILIZED BUSINESSES
EXHIBIT I
HUB SUBCONTRACTING PLAN FOR PRE-CONSTRUCTION PHASE SERVICES
EXHIBIT J
ADDITIONAL SERVICES PROPOSAL
SPECIAL CONDITIONS

These Special Conditions are in addition to the requirements of the Uniform General Conditions and the Supplementary General Conditions of the Contract and are a part of the Contract Documents.

1. LAYING OUT BUILDING: The General Contractor shall employ an experienced and competent Professional Civil Engineer or a Registered Professional Land Surveyor (RPLS) and cause him to establish at least three (3) separate permanent benchmarks, such benchmarks shall be established using two (2) of the permanent University benchmarks as identified by the University to which easy access may be had during the progress of the Work, and from time to time to determine and verify the lines and grades. As the Work progresses, establish easily accessible benchmarks at each level referenced to finish floor line.

a. The layout work shall be supervised by the Civil Engineer or RPLS and approved by the Architect/Engineer. At completion of the layout work, the Civil Engineer or RPLS shall submit a signed report to the Architect/Engineer stating that he is satisfied with the work and its accuracy.

b. The General Contractor shall erect and maintain substantial protection of all established layout controls for structures, set their location to provide proper working clearance and verify that they are level and at the proper grade.

c. As the Work progresses, the General Contractor shall lay out partitions on rough floors in exact locations as a guide to all contractors and trades.

d. Before ordering any materials or doing any work, each Contractor shall verify and be responsible for the correctness of all measurements. No extra charge or compensation will be allowed as a result of difference between actual dimensions and the measurements indicated on the drawings. Any differences, which may be found, shall be submitted to the Architect/Engineer for consideration before proceeding with the Work.

2. LEVEL OR TRANSIT: The General Contractor shall maintain an accurate level or transit at the site at all times. This instrument shall be used to verify lines, grades, etc., and shall be available at all times for use by the Architect/Engineer and the Owner. A surveyor's level or grade control lasers shall be used to lay out all work and shall be used by operators skilled in its use.

3. CUTTING, PATCHING AND INSTALLATION OF SLEEVES: The General Contractor shall coordinate and oversee all cutting and patching activities in the execution of the work and shall leave all chases, holes or openings straight, true and of proper size as may be necessary for the proper installation of his own or other contractor's or subcontractor's work, consulting with the superintendent and contractors or subcontractors concerned regarding proper location and size.

a. No excessive cutting will be permitted nor shall any piers or other structural members be cut without the written approval of the Architect/Engineer. After such work has been installed, the Contractor shall carefully fit around, close up, repair, patch, and point up as directed to the entire satisfaction of the Architect/Engineer and Owner.

b. All this work shall be done carefully with proper tools by personnel of the particular trade to which such work belongs, and shall be done without extra charge to the Owner. Each Contractor or Subcontractor will be required to build into his own work, as directed, any and all items furnished by others. Cutting and repairing of new work, in place, made necessary by negligence of another Contractor or Subcontractor or anyone employed by him, shall be paid for by the party, which is at fault.

c. The work of each section of the Specifications, unless otherwise specified, includes all cutting,
patching and digging for work in that trade section required for proper accommodations of work of other trades. Execute such work with competent personnel skilled in trade required for restoration. The Contractor and/or each Subcontractor shall arrange and pay for cutting and patching required for installation of its own work, as applicable.

d. The Contractor shall ensure sleeves are provided for all service lines, including piping and conduit, covered in the Contract documents, which may pass through walls, roof or floors. Sleeves through floors shall extend 2" above finish Floor and cast into floor or sealed with heavy-duty sealant or fire stop material.

4. SANITARY FACILITIES: The General Contractor shall provide an adequate number of temporary sanitary facilities for the use of all persons employed on the job, and shall clean same at least weekly, or more often as deemed necessary by the Owner. He shall post notices, take such precautions as may be necessary, and remove refuse deposited in or about the buildings necessary to maintain the premises in a sanitary condition. Sanitary facilities shall be located away from public view to greatest extent possible. Neither the General Contractor nor any of the construction work forces shall be allowed to use campus sanitary facilities.

5. PROTECTION: Each Contractor shall protect, properly and effectively, all materials and equipment furnished by him during and after their installation. Building materials, Contractor's equipment, etc., may be stored on the premises, but the placing of same shall be within the construction fence. When any room in the building is used as a shop, storeroom, etc., the Contractor will be held responsible for any repairs, patching or cleaning arising from such use. The Contractor shall protect and be responsible for any damage to the work or material, from the date of the agreement until the final payment is made, and shall make good without cost to the Owner, any damage or loss that may occur during this period. The Contractor shall handle all material as directed, so that it may be inspected by the A/E's and the Owner's representative(s). All cement, lime, insulation, and other material affected by weather shall be covered and protected to keep them free from damage while they are being transported to or stored on the site.

a. During the execution of the Work, open ends of all piping, conduit, and mechanical ducts as well as all openings in equipment shall be closed before leaving the Work at any time, to prevent the entrance of foreign matter.

b. All heating, ventilating, plumbing, and electrical equipment shall be protected during the execution of the Work.

c. All plumbing fixtures shall be protected and shall be boarded over so that they cannot be used by personnel or others. All drains shall be covered until placed in service to prevent the entrance of foreign matter.

6. SIGNS: No signs or advertisements will be allowed to be displayed without the approval of the Owner.

7. SITE SECURITY WATCHMAN AND JANITOR: The Contractor, at its own expense, and option may employ unarmed security personnel when deemed necessary to protect its Work, but must notify the Owner of any such security firms or employees. Campus police will not provide security for the Contractor's areas. The Contractor shall provide a person or persons for janitor work, who shall keep all offices clean, attend to the temporary toilet rooms and keep them clean and supplied, attend to drinking water and supplies. This person shall also help to keep the construction areas broomed, free from accumulated debris, and relatively clean.

8. ACCESS TO SITE AND PROTECTIONS: The Construction Documents shows the area of the building site which may be used by the Contractors. A fence shall be erected by the General Contractor around this gross area. The Contractor and Subcontractors shall confine their activities to this area and in no way obstruct any other part of the campus or utilize any campus facilities for any purpose.
a. As soon as Work is begun at the site, the General Contractor shall build a substantial wire mesh fence at least six feet high as shown on the Construction Documents and completely surrounding the site. Posts shall be placed not more than eight (8) feet apart and set securely. Wire mesh shall be tightly stretched over the supports.

b. Enclosure fences shall be provided with fire gates and gates for trucking in locations shown on Construction Documents, hung with heavy strap hinges, and provided with hasps for locking. Fences and gates shall be properly maintained throughout the duration of the job and removed on completion or when directed by the Architect/Engineer. Where directed by MSU representatives, contractor shall include campus padlocks for access required for service work within fence and/or fire protection of existing buildings.

c. The trees and shrubs, within the work area assigned to the Contractor and endangered plants near access ways to the above, shall be protected by the Contractor with drip-line fencing and tree trunk wooden shields per University policy and as detailed on drawings, all maintained in sound condition. Contractor shall not remove, cut or trim any trees or shrubs in the Contract area before notifying the Owners and Architect/Engineer's representative and receiving approval.

d. The Contractor shall be responsible for the protection of existing building surfaces, both interior and exterior, utilities, exterior structures, pavements, sidewalks, vegetation, irrigation systems, and component parts and equipment. Any damage to existing areas will be repaired at the responsibility of the Contractor with the approval of the Owner. Repairs not satisfactorily completed will be done by the Owner and deducted from the Contractor's contract amount.

e. The Contractor is responsible for expenses incurred as the result of the loss of a security access card or key. As the result of the loss of a master key, an entire building will have to be re-keyed, with the expense charged to the Contractor.

9. PROJECT CLEANLINESS: It shall be the responsibility of the Contractor to see that the debris, trash, and dust residue resulting from building operations are removed from the building and the property in a timely manner. All installed equipment and ductwork shall be protected from accumulations of construction dust. When project work occurs in existing buildings, existing spaces, finishes and ductwork shall be properly sealed and protected from construction dust and damage. The Contractor shall provide personnel for janitorial work in order to keep all offices, office toilet rooms, and portable toilets cleaned; attend to drinking water and supplies. Solid debris, such as brick bats, mortar and plaster droppings, may not be dumped on the grounds about the building. All scrap from lumber, crating, excelsior, paper and similar types of trash are to be removed from the building site. Trash, construction debris, and mud shall not be allowed to accumulate anywhere on the project for periods of longer than one week, whether in the building, on the grounds, in the adjacent areas, or on the campus streets serving as delivery and haul-off routes for the work of this project. In other words, there must be thorough cleanup of the building and its surroundings no less often than once a week, and more often as may be directed by the Owner.

10. WATER FOR BUILDING WORK: The General Contractor shall provide temporary lines for all water required in the building Work and will arrange with the Owner's Utility Department for water service. The Contractor shall include all connections and means of conveying same to place where required, including the necessary metering devices capable of measuring water used by construction activity. In lieu of temporary connections, the Contractor may make permanent connections and this may serve for the construction period. In the event the Owner does not have water available at the site from the Owner's existing distribution system, the Contractor shall negotiate with the City for water and pay all fees and rates required by the City Water Department or shall provide an on site water well of sufficient production for construction.

11. ELECTRICAL ENERGY: The Contractor shall arrange with the local Utility Company for temporary
construction power with metering, whenever available. When using temporary power provided by the local utility company, the contractor is responsible for all costs, including electrical energy costs. If power is available only through the Owner's on-campus system, the Contractor shall arrange for and provide metering equipment capable of measuring power used by construction activities, if relevant to the project. The Contractor may energize the permanent power system in the building only when approved by the Owner. All costs of electrical energy provided through the University's power grid shall be paid by the University unless it is determined that the Contractor is not using the energy in a prudent and reasonable fashion in which case the Contractor shall be required to pay at the prevailing rate of the local Utility Company. When utilizing local Utility Company power, invoices must be submitted prior to payment reimbursement.

12. TEMPORARY HEAT & LIGHTING: If temporary heat is required for protection of the Work, the General Contractor shall provide Owner approved heating apparatus. Provide heat in such a manner that no Work will be damaged and ensure adequate ventilation exists. The Contractor shall provide adequate lighting about the site for security, inspections of excavations, night shift work should such occur, and shall also provide adequate temporary interior lighting throughout the building enclosure to facilitate quality workmanship and appropriate inspection visibility.

13. TEMPORARY SERVICES: If relevant to the project, and after equipment has been connected to the Central Utilities System, the Contractor may request that the utilities department open valves to put systems in service for heating or cooling. The Contractor is NOT to open or close any valves to utility systems. Proper system operation having been demonstrated to the University Utility Department, the Contractor may use the systems for heating and/or cooling once the thermal controls are operational.

During operation of the mechanical equipment, prior to Substantial Completion, the Contractor shall keep the mechanical equipment in good operating condition, properly flushed with chemical treatment systems properly started, properly maintained, including regular replacement, and/or cleaning of filters, both temporary and permanent. The guaranty period shall start on the date of official acceptance. Filters shall be changed at least every 2 weeks and more frequently if extremely dusty conditions exist.

14. REMOVAL OF TEMPORARY FACILITY: When a temporary facility is no longer needed for the proper conduct of the Work, the Contractor shall completely remove it from the Project and shall repair or replace any material, equipment or finished surface damaged in doing so.

15. WARRANTIES AND GUARANTEES: Pursuant to Article XIII of the Uniform General Conditions, additional warranty requirements and guarantees are described more fully in various sections of the technical specifications.

16. PROJECT SIGN: If applicable, the Contractor shall construct and erect one project sign on the project site in a location designated by the Owner. The sign shall make clear reference to the Midwestern State University System as well as Midwestern State University. Submit a one-quarter scale shop drawing of the sign complete with all lettering to the Architect/Owner for approval before construction. The sign shall remain the property of the Contractor, and upon project completion, the Contractor shall remove the sign and remove from University property in a legal manner.

17. PROJECT PLANNING AND SCHEDULING: The Contractor shall participate with the Owner and A/E in a project-planning workshop promptly upon execution of the contract unless specified differently in the Contract document. Based on the project plan developed at that workshop, and within twenty-one (21) calendar days from Notice to Proceed, the Contractor shall submit its proposed Work Progress Schedule for the entire duration of the project to the Owner and A/E for review. The Schedule shall be coordinated with the Contract Price Breakdown, or Schedule of Values, and shall include all significant procurement, including long lead-time delivery items and approval activities, all work placement activities, including start and completion dates, identification of time periods for overhead inspections, pre-final and final inspections, system start-up and
commissioning, and punch-list corrections, as a minimum. The initial schedule submission shall coincide with the initial submittal of the Contract Price Breakdown and the two documents will be reviewed together. The Contractor shall revise the schedule as necessary to obtain acceptance by the Owner and A/E to establish a Baseline Schedule for the project. Once the Baseline Schedule is accepted, the Contractor shall update the schedule monthly, as a minimum, to record actual progress of activity start and completion and remaining durations and shall provide updated reports monthly to the Owner and A/E in association with each request for progress payment. The format and content of monthly update reporting shall be as determined at the project-planning workshop unless specified otherwise in the contract documents. The Contractor shall include a separate line item in its Contract Price Breakdown for planning and scheduling, to include development of the accepted Baseline Schedule and all updates and reporting.

18. CLARIFICATION OF INSURANCE REQUIREMENTS: Refer to the Uniform General Conditions and Supplementary General Conditions, paragraph 5.2. When the project involves work in an existing structure, the scope of this Builder's Risk Insurance is to cover any portion of an existing building which is in the Contractor's care, custody or control (which may be necessary to do Work in another portion of the building), over and above the normal limitations imposed by paragraph 5.2. Paragraph 5.2 is not intended to increase the dollar amount of the Insurance, which is stipulated in paragraph 5.2 to be 100% of the value of the Work, but only to increase the scope of what is to be covered.

19. PREVAILING WAGE RATE DETERMINATION: Pursuant to the Uniform General Conditions/Supplementary General Conditions, the following schedule indicates the prevailing wage rate determination determined by the Owner.

See Attachment "B" Prevailing Rate Schedule.

20. ONGOING CAMPUS/OWNER OPERATIONS: This project is surrounded by continuously functioning campus facilities, including student housing, academic and research efforts. The Contractor shall make every effort to avoid disruptions to ongoing campus activities and to maintain a safe environment for students, faculty, and staff in the areas adjacent to the project. Campus utilities must not be interrupted except when scheduled and approved in advance through Owner-designated established channels. The Contractor of his personnel shall NOT open or close any valves of the central campus utilities. Valve operation is to be done by University utilities personnel only. The Contractor shall not activate or de-activate any campus utility system, or component of any such system, without express written direction from the Owner.

The facilities will only be available during the scheduled construction time-period as specified by the Owner, typically from 8:00 am until 6:00 pm Monday through Friday. Work during other times, including weekends, shall only be allowed with prior request and written authorization from the Owner. In addition, the Contractor shall accommodate and coordinate its construction work force and activities to allow the Owner's forces and Owner's separate subcontractors (i.e. telephone, data, IT, computer, and furniture installation) to enter the jobsite to perform their work.

21. CONTRACTOR PARKING: Parking is either within the Contractor's fenced area, or off campus at the Contractor's expense. There will be no parking outside of fenced area adjacent to the site or on public streets on campus for any of the contractor's work force unless specifically approved by the Owner.

A limited number of remote parking spaces may be provided near the campus. Such parking will be available at no cost to the Contractor or the workers but will require permits, issued by the campus police department, for all vehicles and transportation furnished by the Contractor. Such remote parking is provided for the convenience of the Contractor with the understanding that the Contractor is responsible for all workers and all workers' vehicles while they are on the campus.

22. RESPONSIBILITY FOR WORK FORCE: A superintendent shall be on site at all times while work is
in progress. The Contractor is responsible for the actions of its entire work force, including Subcontractor's and supplier's employees, whenever they are on the campus. The Contractor shall submit their plan for identifying and controlling all workers, and for management of personnel records, including payroll records. Identification badges for workers, busing of workers from remote parking lot(s), frequent written and verbal reminders to work force of appropriate behavior and avoidance of campus facilities, and publishing of established access and egress routes for vehicular and pedestrian traffic are required, as a minimum, in order to maintain control of the work force.

a. Unacceptable behavior on the part of the workers anywhere on campus, including parking lots, the project site, and the accessing route(s) through the site through the campus, or failure to obtain parking permits, or traffic violations while on campus may lead to cancellation of the Contractor's on-campus parking privileges. Further, identifiable offending worker(s) will be removed from the project.

b. Harassment of any person, whether student, faculty, staff, or visitor to the campus, is forbidden. Harassment includes any action such as jeering, whistling, calling-out, staring, snickering, making rude or questionable comments, or similar behavior. If identifiable, any offending worker(s) will be removed from the project.

23. SITE ACCESS AND CONTROL: All campus roads, drives and fire lanes as well as all sidewalks and pedestrian routes, other than those specifically indicated to be in the contractor's area of control, must be kept open at all times. The Contractor shall make advance preparations for, and obtain security clearance for, all significant material deliveries and truck traffic, cranes, concrete trucks, etc., through the campus to the project site. Contractor shall provide all traffic controls, warning signs, barricades, and flagmen during all construction traffic operations that affect roadways and pedestrian walkways with plans for same that are acceptable to the Owner.

24. NOISE CONTROL: Equipment locations and timing or sequence of work operations shall be coordinated so as not to inordinately conflict with the Owner's continuing use of the existing or adjacent buildings, and/or minimally interfere with scheduled meetings or events or on-going operations.

25. SMOKING: Smoking is not allowed inside any campus building or anywhere on campus except in designated areas. Smoking will not be allowed in any enclosed area of the building(s) of this project. Enclosed, as used here, refers to erection of exterior walls and overhead structure for any portion of the project; it does not mean to indicate a state of building "dry-in". Use or possession of illegal drugs or alcohol on the project site or anywhere on campus is forbidden.

26. SITE AND AREA MAINTENANCE: The Contractor shall erect erosion control at the perimeter of the site and otherwise control migration of construction debris and dirt to campus and public areas adjacent the project site. The Contractor shall keep all roadways in the vicinity of the project clear of mud, dirt, debris, and construction materials. The Contractor will be required to clean campus streets utilized as truck routes for the project if mud or debris is allowed to remain in the roadways. If such roadways, parking lots or site improvements are damaged by the work of this project, the Contractor will be required to repair them in kind to a quality acceptable to the Owner.

27. GENERAL PERMITS: The Owner is exempt from paying for permits and fees to local government entities related to work on the Owner's property. There will be no building permit required, no platting fees and no local government inspection fees for permanent work on the Owner's property. The Owner is not exempt from permit and fee requirements for work in public rights of way or outside the boundaries of the Owner's property. The Contractor shall secure, pay and maintain all required permits.

28. SEDIMENTATION AND EROSION CONTROLS/NPDES GENERAL PERMIT: The National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges from Construction Sites (General Permit) issued by the United States Environmental Protection Agency
(EPA) requires compliance for construction activities resulting in the disturbance of five (5) acres or more or if a construction site is part of a common plan of development of five (5) acres or more. The Owner’s property is comprised of an overall total of approximately 473 acres of which this project covers a part; therefore, compliance with the NPDES General Permit is required.

a. Indemnification. GENERAL CONTRACTOR HEREBY INDEMNIFIES AND HOLDS HARMLESS OWNER FROM ANY AND ALL LIABILITY, LOSS, DAMAGE, COST, AND EXPENSE ARISING OUT OF A VIOLATION OF THE APPLICABLE EPA NPDES REGULATIONS, THIS SPECIAL CONDITIONS SECTION, OR THE TERMS AND CONDITIONS OF THE GENERAL PERMIT TO THE EXTENT ATTRIBUTABLE TO AN ACT OR OMISSION OF GENERAL CONTRACTOR, ITS SUBCONTRACTORS AT ANY TIER, OR CONSULTANTS.

29. ENVIRONMENTAL PROTECTION PROCEDURES: Any existing trees and shrubs within the Project Site assigned to the contractor and any endangered plants near access ways to the Project Site, shall be protected by the Contractor as detailed in the Drawings, or maintained in sound condition until permission is given for their removal. Contractor shall not remove, cut or trim any trees or shrubs in the Project Site before notifying the Owner’s representative and receiving his prior approval. Any vegetation damaged during construction shall be replaced in kind. The Contractor shall be responsible for repair of all damage to areas of the Project site used for construction storage purposes. Repair shall consist of replacing trees, vegetation, grasses in kind with watering and maintenance as required for establishment unless otherwise noted on the Drawings.

The Contractor is solely responsible for cleaning up and properly disposing of all spilled pollutants brought to the site as part of the Contractor’s work, including oil, paint, fuels, antifreeze, solvents, etc. in accordance with applicable laws and regulations. Contractor must keep accurate records (such as receipts, copies of analytical results, etc.), indicating proper cleanup and disposal of spilled materials in accordance with applicable laws and regulations. Furthermore, Contractor is responsible for ensuring that all discharges from the site are in compliance with all applicable laws and regulations. Contractor is responsible for pollutant contaminated run-off and proper disposal of all waste materials generated as a result of work activities.

Chemical cleaning of new utility additions shall be done by circulating a good non-phosphate cleaner through as much of the new system as possible. Prior to dumping the cleaning agent, notify the City of Industrial Water Treatment Department to sample the effluent. If the City of approves dumping to drain, then dump to the sanitary sewer. Refill the system with water, circulate and again have the City of Industrial Waste Water Treatment Department to sample prior to dumping. If at any stage the City of refuses to accept the effluent, the Contractor must make special arrangements for the legal disposal of the effluent and give the owner a copy of the shipping and disposal manifests.

30. CONTRACTOR OCCUPANCY AND LIMITS OF CONSTRUCTION: The Contractor and all his personnel, his assigns, materialmen, suppliers and subcontractors shall confine and limit their work and use of the Project Site to those areas within the defined Project Site limits of construction. All areas beyond these limits are patrolled by the City of Police Department and The MSU Midwestern State University- Campus Police Department personnel. All public and University rules, laws and requirement shall be obeyed. No tools, construction vehicles, or construction material shall be permitted beyond the Project Site limits of construction. The Contractor shall confine his personnel within the Project Site limits of construction. Loitering of construction personnel beyond the fenced limits of construction or around the Project Site construction entry gates shall be discouraged.

31. RECORD DOCUMENTS: The Contractor shall provide the Owner, at between one month and three months prior to Substantial Completion, with a complete set of the as-built Telecommunication Drawings and Telecommunication Port Log for the Owner's use in coordinating selection and procurement of telephone/data equipment.
As a requirement for acceptance of Substantial Completion, the Contractor shall reproduce two (2) copies of the current As-Built Drawings and Specifications maintained at the job site and provide these copies to the Owner. These documents shall be labeled “Interim Record Drawings and Specifications”, and are required to assist the Owner in the operation of the facility until Final Completion is accomplished and the final As-Built Drawings and Specifications are provided to the Project Architect/Engineer to prepare the final “Record Drawings” and “Record Specifications”. Three (3) weeks before substantial completion acceptance of the project, the contractor shall have submitted a draft copy of the Owner’s operating and maintenance manuals. Two (2) copies of the final owners operating and maintenance manuals shall be delivered within 30 days of substantial completion and include copies of ALL approved shop drawings and submittal; list of ALL subcontractors and vendors including names, addresses, phone numbers; warranty and guarantee documents, etc.

32. CHANGE ORDER PRICING: Article XII, Sec, 11.3.4 of General add the following:

The total cost of all labor and materials, including supervision up to the level of Project Superintendent, itemized to show man-hours by trade and classification, unburdened hourly rates, and total labor cost. Man-hour totals, labor rates, and materials shall be based on reasonable and prevailing area labor rates and materials costs.

33. FIELD MANAGEMENT AND TEMPORARY STRUCTURES:

a. The Contractor shall coordinate and direct the work of this project from the site or Owner-designated area at adjacent site for the duration of the Work. One or more of the following options applies to this Project only if designated by a checked box:

- The Owner will designate and provide an adequately sized enclosed area for field office operations to the General Contractor adjacent the Project site. This location is to be properly maintained and released back to the owner in its original condition.

- The Contractor shall provide and maintain its own temporary field office(s) that is weather-tight, well-lighted, air conditioned and safely heated, and to include provisions for telephone, data, and facsimile services, conference area(s), including tables and chairs, toilet facilities, and maintenance of all project files including submittals, project correspondence, and payment and payroll records, etc. The University will assist in providing hook-ups for telephone, data, and facsimile services when project is within campus grid. A lockable, 12’ x 12’ minimum private office shall be provided for the use of the Owner and A/E, equipped with an operational telephone, a fax machine and computer connections.

- The Contractor shall provide and maintain a conference area, which shall include at least one primary area suitable for up to fifteen (15) persons to participate in progress and coordination meetings. The walls of this conference area are to serve as display surfaces for maintaining current prints of project schedules and work placement plans. This space can be incorporated with the Contractor’s office trailers, and will be for shared and joint use by both throughout the project duration.

- The Contractor shall provide and maintain at the site for the duration of the Project, for the use of the Owner and its consultants, including the Architect/Engineer, a separate field office structure which is adequately weather-tight, well-lighted, air conditioned and safely heated, adequately supported and anchored, with toilet facilities, and two long distance phone/fax lines. Local calls made from these lines shall be paid by the General Contractor. Long distance calls shall be paid for by the person or party placing the calls. The telephone numbers shall be reported to the Owner and the Architect/Engineer as soon as the telephones are installed.
Such field office shall be a minimum of twelve (12) feet wide by about thirty- (30) feet long and shall be partitioned to provide for two separate work areas including two entry doors with keyed locks, and shall include toilet facilities. Each of the three "office" areas within this structure shall be provided with layout tables, plan storage, file cabinets, desk and chairs, one telephone and outlet and one fax and one data outlet, as well as adequate convenience outlets to accommodate business machines.

Telephone service to this field office shall include one phone line capable of local and long distance service with voice mail and one fax and one data line, for a total of three separate lines, each with individual phone numbers and each line to be connected to multiple outlets for convenient arrangement. All costs for providing this telephone service, including a phone unit in each separate area, shall be paid by the Contractor.

b. The General Contractor shall arrange for each Subcontractor to have field office accommodations as necessary to perform their work adequately.

c. The General Contractor shall provide adequate and safe entries to all field offices, including steps with railings and landings or stoops as required, and shall provide hard surface walkways to connect the field office structures to one another and to site entry or exit.

d. Upon authorization to mobilize, the General Contractor shall submit a plan layout showing location of field offices, size and arrangement of spaces and outlets, fencing, site control points, and utility tie-in locations for Owner review and acceptance.

e. All costs for temporary field offices shall be included in the Contractor's Contract Price Breakdown. Reimbursement of such costs shall be included in the regular Progress Payment on a monthly basis, pro-rated over the anticipated duration of the project.

34. TEMPORARY EQUIPMENT:

a. The General Contractor shall provide all scaffolding necessary for the performance of the Work. All scaffolding shall be so constructed, anchored, and braced as to comply in all respects with OSHA guidelines to afford safety and protection to both craftsmen and their Work, inspectors, and to the Work of other contractors.

b. The General Contractor and its Subcontractors shall provide on the premises at locations approved by the Owner, suitable substantial watertight storage sheds for the storage of tools and all materials which would be damaged by the weather; shall maintain same in good condition and shall remove same when directed. All storage sheds shall be of sufficient size to hold the materials required and shall have floors raised at least 6" above the ground on heavy joists.

c. Except as otherwise specified, the Contractor shall furnish at its own cost and risk, all significant tools, apparatus, hoists or cranes, derricks, etc.

d. Temporary equipment shall be installed in such a manner that finish work will not be damaged by smoke, falling mortar, concrete or other causes. Location and arrangement of temporary equipment shall be subject to the approval of the Construction Inspector.

e. All temporary shoring required for the installation of Work shall be included in this Contract and the General Contractor must assume all responsibility for this Work and make good any damage caused by improper supports or failure of shoring in any respect.

35. SAFETY:

a. The Contractor shall provide barricades, warning signs and lights. Comply with recognized standards and code requirements for the erection of substantial barricades where needed to
prevent accidents and any unsafe condition from developing during the construction period.

b. The Contractor shall review fire prevention and protection needs with the Owner's personnel in procedures and post warnings and information. Maintain unobstructed access to fire extinguishers, temporary fire protection facilities, stairways and other access routes. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of ignition.

c. The Contractor shall be responsible for initiating, maintaining, and supervising safety precautions and programs associated with the work. It shall be the duty and responsibility of the Contractor to comply with all pertinent sections of the Occupational Safety and Health Act and all amendments thereof. The Contractor shall do all things necessary and provide all equipment and labor necessary to protect students, staff, faculty, and the general public from dangers associated with the work. Walkways, parking areas, and other areas surrounding the job site will be in use and given priority. The University shall not be held responsible for failure of the Contractor to perform the job in a safe manner.

36. HAZARDOUS MATERIALS: For information only, an asbestos report has or has not been filed on the portion of the existing building involved in the project and a positive or negative result was reported. See abatement requirements, if relevant, elsewhere in the Construction Documents. In the event the Contractor encounters material, which he reasonably believed to be asbestos, which has not been abated, the Contractor shall immediately stop work in the area affected and report the condition to the Owner. If in fact the material is asbestos and has not been abated, the Contractor shall not resume the non-asbestos-related work in the affected area until the asbestos has been abated. The abatement action may be done in any of three ways, as the Owner may decide. The Owner may perform the abatement by its own forces, or the Owner may contract with a third party to perform the abatement, or the Contractor may perform the abatement by an appropriate means acceptable to the Owner such as performing the work through its own employees if they are appropriately certified or hiring an abatement subcontractor. If the Contractor is to perform the abatement, the Owner and the Contractor will negotiate a change order in accordance with the contract terms relative to extra work. In such a case, the Owner specifically agrees that the cost of any special comprehensive general liability insurance that may be required relative to the abatement work will be considered a direct cost of the extra work, on which like the other direct costs the Contractor will be allowed to add a percentage of 5% or 15%.

---End of Special Conditions---
Uniform General Conditions for Construction Contracts

August 17, 2005
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Uniform General Conditions
Article 1. Definitions

Unless the context clearly requires another meaning, the following terms have the meaning assigned herein.

1.1 Architect/Engineer (A/E) means a person registered as an architect pursuant to Tex. Occ. Code Ann., Chapter 1051, as a landscape architect pursuant to Tex. Occ. Code Ann., Chapter 1052, a person licensed as a professional engineer pursuant Tex. Occ. Code Ann., Chapter 1001 and/or a firm employed by Owner or Design-Build Contractor to provide professional architectural or engineering services and to exercise overall responsibility for the design of a Project or a significant portion thereof, and to perform the contract administration responsibilities set forth in the Contract.

1.2 Change Order means a written modification of the Contract between the Owner and Contractor, signed by the Owner, the Contractor and the Architect/Engineer.

1.3 Change Order Proposal means a Contractor-generated document in response to a Change Order Request (COR).

1.4 Change Order Request (COR) means a document which informs the contractor of a proposed change in the Work, and appropriately describes or otherwise documents such change.

1.5 Close-out documents means the product brochures, product/equipment maintenance and operations instructions, manuals, and other documents/warranties, as-built record documents, affidavit of payment, release of lien and claim, and as may be further defined, identified, and required by the Contract Documents.

1.6 Contract means the entire agreement between the Owner and the Contractor, including all of the Contract Documents.

1.7 Contract Date is the date when the agreement between the owner and the contractor becomes effective.

1.8 Contract Documents means those documents identified as a component of the agreement (contract) between the owner and the contractor. These may include, but are not limited to, Drawings, Specifications, General, Supplementary and Special Conditions, and all pre-bid and/or pre-proposal addenda.

1.9 Contractor means the individual, corporation, company, partnership, firm or other entity contracted to perform the Work, regardless of the type of construction contract used, so that the term as used herein includes a Construction Manager-at-Risk or a Design-Build firm as well as a
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General or Prime Contractor. The contract documents refer to Contractor as if singular in number.

1.10 Contract Sum means the total compensation payable to the Contractor for completion of the Work in accordance with the terms of the contract.

1.11 Contract Time means the period between the Start Date identified in the Notice to Proceed with Construction and the Substantial Completion date identified in the Notice to Proceed or as subsequently amended by Change Order.

1.12 Date of Commencement means the date designated in the Notice to Proceed for the Contractor to commence the Work.

1.13 Day means a calendar day, unless otherwise specifically stipulated.

1.14 Drawings means that product of the Architect/Engineer which graphically depicts the Work.

1.15 Final Completion means the date determined and certified by the Architect/Engineer and Owner on which the Work is fully and satisfactorily complete in accordance with the Contract.

1.16 Owner means the State of Texas and any Agency of the State of Texas, acting through the responsible entity of the State of Texas identified in the Contract as the Owner.

1.17 Owner's Designated Representative (ODR) means the individual assigned by the Owner to act on its behalf, and to undertake certain activities as specifically outlined in the Contract. The ODR is the only party authorized to direct changes to the scope, cost, or time of the contract.

1.18 Project means all activities necessary for realization of the Work. This includes design, contract award(s), execution of the Work itself, and fulfillment of all contract and warranty obligations.

1.19 Samples means representative physical examples of materials, equipment or workmanship, used to confirm compliance with requirements and/or to establish standards for use in execution of the Work.

1.20 Schedule of Values means the detailed breakdown of the cost of the materials, labor and equipment necessary to accomplish the Work as described in the Contract Documents, submitted by Contractor for approval by Owner and Architect/Engineer.

1.21 Shop Drawings means the drawings, diagrams, illustrations, schedules, performance charts, brochures and other data prepared by the Contractor or its agents, which detail a portion of the Work.

1.22 Site means the geographical area of the location of the Work.

1.23 Special Conditions means the documents containing terms and conditions, which may be unique to the project. Special Conditions are a
part of the Contract Documents and have precedence over the Uniform General Conditions.

1.24 **Specifications** means the written product of the Architect/Engineer that establishes the quality and/or performance of products utilized in the Work and processes to be used, including testing and verification for producing the Work.

1.25 **Subcontractor** means a business entity that enters into an agreement with the Contractor to perform part of the Work or to provide services, materials or equipment for use in the Work.

1.26 **Substantial Completion** means the date determined and certified by the Contractor, Architect/Engineer and Owner when the Work or a designated portion thereof is sufficiently complete, in accordance with the Contract, so as to be operational and fit for the use intended.

1.27 **Supplementary General Conditions** means procedures and requirements that modify the Uniform General Conditions. Supplementary General Conditions, when used, have precedence over the Uniform General Conditions.

1.28 **Unit Price Work** means Work or a portion of the Work paid for based on incremental units of measurement.

1.29 **Unilateral Change Order (ULCO)** means a Change Order issued by the Owner without the agreement of the Contractor.

1.30 **Work** means the administration, procurement, materials, equipment, construction and all services necessary for the Contractor, and/or its agents, to fulfill the Contractor’s obligations under the Contract.
Article 2. Laws Governing Construction

2.1. Environmental Regulations. The Contractor shall conduct activities in compliance with applicable laws and regulations and other requirements of the Contract relating to the environment, and its protection at all times. Unless otherwise specifically determined, the Owner is responsible for obtaining and maintaining permits related to stormwater run-off. The Contractor shall conduct operations consistent with stormwater run-off permit conditions. Contractor is responsible for all items it brings to site, including hazardous materials, and all such items brought to the site by its subcontractors and suppliers, or by other entities subject to direction of the Contractor. The Contractor shall not incorporate hazardous materials into the Work without prior approval of Owner, and shall provide an affidavit attesting to such in association with request for Substantial Completion inspection.

2.2. Wage Rates. The Contractor shall not pay less than the wage scale of the various classes of labor as shown on the “Prevailing Wage Schedule” provided by the Owner. The specified wage rates are minimum rates only. The Owner is not bound to pay any claims for additional compensation made by any Contractor because the Contractor pays wages in excess of the applicable minimum rate contained in the Contract. The “Prevailing Wage Schedule” is not a representation that qualified labor adequate to perform the Work is available locally at the prevailing wage rates.

2.2.1 Notification to Workers. The Contractor shall notify each worker, in writing, of the following as they commence work on the contract: the worker’s job classification, the established minimum wage rate requirement for that classification, as well as the worker’s actual wage. The notice must be delivered to and signed in acknowledgement of receipt by the employee and must list both the wages and fringe benefits to be paid or furnished for each classification in which the worker is assigned duties. When requested by the Owner, the Contractor shall furnish evidence of compliance with the Texas Prevailing Wage Law.

2.2.1.1 Submit a copy of each worker wage-rate notification to the ODR with the application for progress payment for the period during which the worker was engaged in activities on behalf of the project.

2.2.1.2 The “Prevailing Wage Schedule” is determined by the Owner in compliance with Tex. Gov’t Code, Chapter 2258. Should the Contractor at any time become aware that a particular skill or trade not reflected on the Owner’s Prevailing Wage Schedule will be or is being employed in the Work, whether by the Contractor or by a subcontractor, the Contractor shall promptly inform the ODR of the proposed wage to be paid for the skill along with a justification for same. The Contractor is responsible for determining the most appropriate wage for a particular skill in relation to similar skills or trades identified on the Prevailing Wage
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Schedule. In no case shall any worker be paid less than the wage indicated for Laborers.

2.2.1.3 **Penalty for Violation.** The Contractor and any Subcontractor will pay to the State a penalty of sixty dollars ($60) for each worker employed for each calendar day, or portion thereof, that the worker is paid less than the wage rates stipulated in the Prevailing Wage Schedule.

2.2.1.4 **Complaints of Violations**

2.2.1.4.1 Owner’s Determination of Good Cause. Upon receipt of information concerning a violation of Tex. Gov’t Code, Chapter 2258, the Owner will, within 31 days, make an initial determination as to whether good cause exists that a violation occurred. The Owner will send documentation of the initial determination to the Contractor against whom the violation was alleged, and to the worker involved. Upon making a good-cause finding, the Owner will retain the full amounts claimed by the claimant or claimants as the difference between wages paid and wages due under the Prevailing Wage Schedule and any supplements thereto, together with the applicable penalties, such amounts being subtracted from successive progress payments pending a final decision on the violation.

2.2.1.4.2 If the Contractor and claimant worker reach an agreement concerning the claim, the contractor shall promptly notify the Owner in a written document countersigned by the worker.

2.2.1.4.3 Arbitration Required. If the violation is not resolved within 14 days following initial determination by the Owner, the Contractor and the claimant worker must participate in binding arbitration in accordance with the Texas General Arbitration Act, Tex. Civ. Prac. & Rev. Code, Chapter 171. For a period not to exceed 10 days, after which, if no agreement reached, a district court may be petitioned by any of the parties to the arbitration to appoint an arbitrator whose decision will be binding on all parties.

2.2.1.4.4 Arbitration Award. If an arbitrator assesses an award against the Contractor, the Contractor shall promptly furnish a copy of said award to the Owner. The Owner may use any amounts retained under Article 2.2.1.4.1 to pay the worker the amount as designated in the arbitration award. If the retained funds are insufficient to pay the worker in accordance with the arbitration award, the worker has a right of action against the Contractor, and/or the surety to receive the amount owed, plus attorneys’ fees and court costs. The Owner has no duty to release any funds to either the claimant or the Contractor until
it has received the notices of agreement or the arbitration award.

2.2.1.4.5 No Extension of Time. If the Owner's determination proves valid that good cause existed to believe a violation had occurred, the Contractor is not entitled to an extension of time for any delay arising directly or indirectly from of the arbitration procedures set forth herein.

2.3. Venue for Suits. The venue for any suit arising from this contract will be in a court of competent jurisdiction in Travis County, Texas, or as may otherwise designated in the Supplementary General Conditions.

2.4. Licensing of Trades. The Contractor shall comply with all applicable provisions of state law related to license requirements for skilled tradesmen, contractors, suppliers and or laborers, as necessary to accomplish the Work. In the event the Contractor, or one of its Subcontractors, loses its license during the term of performance of the Contract, the Contractor shall promptly hire or contract with a licensed provider of the service at no additional cost to the Owner.

2.5. Royalties, Patents & Copyrights. The Contractor shall pay all royalties and license fees, defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof.

2.6. State Sales and Use Taxes. The Owner qualifies for exemption from certain State and Local Sales and Use Taxes pursuant to the provisions of Tex. Tax Code, Chapter 151. The Contractor may claim exemption from payment of applicable State taxes by complying with such procedures as prescribed by the State Comptroller of Public Accounts.
Article 3. General Responsibilities of Owner & Contractor

3.1. Owner's General Responsibilities. The Owner is the entity identified as such in the Contract and referred to throughout the Contract Documents as if singular in number.

3.1.1 Preconstruction Conference. Prior to, or concurrent with, the issuance of Notice to Proceed with Construction, a conference will be convened for attendance by the Owner, Contractor, Architect/Engineer (AE) and appropriate Subcontractors. The purpose of the conference is to establish a working understanding among the parties as to the Work, the operational conditions at the project site, and general administration of the Project. Topics include communications, schedules, procedures for handling Shop Drawings and other submittals, processing Applications for Payment, maintaining required records and all other matters of importance to the administration of the Project and effective communications between the project team members.

3.1.2 Owner's Designated Representative. Prior to the start of construction, Owner will identify the Owner's Designated Representative (ODR), who has the express authority to act and bind the Owner to the extent and for the purposes described in the various Articles of the Contract, including responsibilities for general administration of the Contract.

3.1.2.1 Unless otherwise specifically defined elsewhere in the contract documents, the ODR is the single point of contact between the Owner and Contractor. Notice to the ODR, unless otherwise noted, constitutes notice to the Owner under the Contract.

3.1.2.2 All directives on behalf of the Owner will be conveyed to the Contractor by the ODR in writing.

3.1.3 Owner Supplied Materials and Information.

3.1.3.1 The Owner will furnish to the Contractor those surveys describing the physical characteristics, legal description, limitations of the site, site utility locations, and other information used in the preparation of the Contract Documents.

3.1.3.2 The Owner will provide information, equipment, or services under the Owner's control to the Contractor with reasonable promptness.

3.1.4 Availability of Lands. The Owner will furnish, as indicated in the Contract, all required rights to use the lands upon which the Work occurs. This includes rights-of-way and easements for access and...
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such other lands that are designated for use by the Contractor. The Contractor shall comply with all Owner identified encumbrances or restrictions specifically related to use of lands so furnished. The Owner will obtain and pay for easements for permanent structures or permanent changes in existing facilities, unless otherwise required in the Contract Documents.

3.1.5 Limitation on Owner's Duties

3.1.5.1 The Owner will not supervise, direct, control or have authority over or be responsible for Contractor’s means, methods, technologies, sequences or procedures of construction or the safety precautions and programs incident thereto. The Owner is not responsible for any failure of Contractor to comply with laws and regulations applicable to the Work. The Owner is not responsible for the failure of Contractor to perform or furnish the Work in accordance with the Contract Documents. Owner are not responsible for the acts or omissions of Contractor, or any of its subcontractors, suppliers or of any other person or organization performing or furnishing any of the Work on behalf of the Contractor.

3.1.5.2 The Owner will not take any action in contravention of a design decision made by the AE in preparation of the Contract Documents, when such actions are in conflict with statutes under which the AE is licensed for the protection of the public health and safety.

3.2 Role of Architect/Engineer. Unless specified otherwise in the Contract between the Owner and the Contractor, the AE shall provide general administration services for the Owner during the construction phase of the project. Written correspondence, requests for information, and shop drawings/submittals shall be directed to the AE for action. The AE has the authority to act on behalf of the Owner to the extent provided in the Contract Documents, unless otherwise modified by written instrument, which will be furnished to the Contractor by the ODR, upon request.

3.2.1 Site Visits

3.2.1.1 The AE will make visits to the site at intervals as provided in the AE’s contract agreement with the Owner, to observe the progress and the quality of the various aspects of Contractor’s executed Work and report findings to the Owner.

3.2.1.2 The AE has the authority to interpret Contract Documents and inspect the Work for compliance and conformance with the Contract. Except as referenced in Article 3.1.5.2, the Owner retains the sole authority to accept or reject Work and issue direction for correction, removal, or replacement of Work.

3.2.2 Clarifications and Interpretations. It may be determined that clarifications or interpretations of the Contract Documents are
necessary. Upon direction by the ODR such clarifications or interpretations will be provided by the AE consistent with the intent of the Contract Documents. The AE will issue these clarifications with reasonable promptness to the Contractor as Architect's Supplemental Instruction (ASI) or similar instrument. If Contractor believes that such clarification or interpretation justifies an adjustment in the Contract Sum or the Contract Time, the Contractor shall so notify the Owner in accordance with the provisions of Article 11.

3.2.3 Limitations on Architect/Engineer Authority. The AE is not responsible for:

3.2.3.1 The Contractor's means, methods, techniques, sequences, procedures, safety, or programs incident to the Project nor will the AE supervise, direct, control or have authority over the same.

3.2.3.2 The Failure of Contractor to comply with laws and regulations applicable to the furnishing or performing the Work.

3.2.3.3 The Contractor's failure to perform or furnish the Work in accordance with the Contract Documents.

3.2.3.4 Acts or omissions of the Contractor, or of any other person or organization performing or furnishing any of the Work.

3.3 Contractor's General Responsibilities. The Contractor is solely responsible for implementing the Work in full compliance with all applicable laws and the contract documents and shall supervise and direct the Work using the best skill and attention to assure that each element of the Work conforms to the Contract requirements. The Contractor is solely responsible for all construction means, methods, techniques, safety, sequences, coordination and procedures.

3.3.1 Project Administration. The Contractor shall provide project administration for all subcontractors, vendors, suppliers, and others involved in implementing the Work and shall coordinate administration efforts with those of the AE and ODR in accordance with these General Conditions and provisions of Division 1 Specifications, and as outlined in the Pre-construction Conference.

3.3.2 Contractor's Superintendent. Employ a competent resident superintendent who will be present at the Project Site during the progress of the Work. The superintendent is subject to the approval of the ODR. Do not change approved superintendents during the course of the project without the written approval of the ODR unless the superintendent leaves the employ of the Contractor.

3.3.3 Labor. Provide competent, suitably qualified personnel to survey, lay-out, and construct the Work as required by the Contract Documents. Maintain good discipline and order at the Site at all times.
3.3.4 **Services, Materials, and Equipment.** Unless otherwise specified, provide and assume full responsibility for all services, materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities, incidentals, and services necessary for the construction, performance, testing, start-up, inspection and completion of the Work.

3.3.5 **Non-Compliant Work.** Should the AE and/or the ODR identify Work as non-compliant with the Contract Documents, the ODR will communicate the finding to the Contractor and the Contractor will correct such Work at its expense. The approval of Work by either the AE or ODR does not relieve the Contractor from the obligation to comply with all requirements of the Contract Documents.

3.3.6 **Subcontractors.** Do not employ any Subcontractor, supplier or other person or organization, whether initially or as a substitute, against whom the Owner may have reasonable objection. The Owner will communicate such objections in writing. The Contractor is not required to employ any Subcontractor, supplier or other person or organization to furnish any of the work to whom the Contractor has reasonable objection. The Contractor will not substitute Subcontractors without the acceptance of the Owner.

3.3.6.1 All Subcontracts and supply contracts shall be consistent with and bound to the terms and conditions of the Contract Documents including provisions of the Agreement between the Contractor and the Owner.

3.3.6.2 The Contractor shall be solely responsible for scheduling and coordinating the Work of Subcontractors, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Contractor. Require all Subcontractors, suppliers and such other persons and organizations performing or furnishing any of the Work to communicate with Owner only through the Contractor. Furnish to the Owner a copy of each first-tier subcontract promptly after its execution. The Contractor agrees that the Owner has no obligation to review or approve the content of such contracts and that providing the Owner such copies in no way relieves the Contractor of any of the terms and conditions of the Contract, including, without limitation, any provisions of the Contract which require the subcontractor to be bound to the Contractor in the same manner in which the Contractor is bound to the Owner.

3.3.7 **Continuing the Work.** Carry on the Work and adhere to the progress schedule during all disputes, disagreements or alternative resolution processes with the Owner. Do not delay or postpone any Work.
because of the pending resolution of any disputes, disagreements or processes, except as the Owner and the Contractor may agree in writing.

3.3.8 **Cleaning.** At all times, keep the Site and the Work clean and free from accumulation of waste materials or rubbish caused by the construction activities under the Contract. The Contractor shall ensure that the entire Project is thoroughly cleaned prior to requesting Substantial Completion Inspection and, again, upon completion of the Project prior to the final inspection.

3.3.9 **Acts and Omissions of Contractor, its Subcontractors and Employees.** The Contractor is responsible for acts and omissions of his employees and all its subcontractors, their agents and employees. The Owner may, in writing, require the Contractor to remove from the Project any of Contractor’s or its subcontractor’s employees that the ODR finds to be careless, incompetent, or otherwise objectionable.

3.3.10 **Indemnification of Owner.** The Contractor covenants and agrees to FULLY INDEMNIFY and HOLD HARMLESS, the Owner and the elected officials, employees, officers, directors, volunteers, and representatives of the Owner, individually or collectively, from and against any and all costs, claims, liens, damages, losses, expenses, fees, fines, penalties, proceedings, actions, demands, causes of action, liability and suits of any kind and nature, including but not limited to, personal or bodily injury, death and property damage, made upon the Owner directly or indirectly arising out of, resulting from or related to Contractor’s activities under this Contract, including any acts or omissions of Contractor, any agent, officer, director, representative, employee, consultant or the Subcontractor of Contractor, and their respective officers, agents, employees, directors and representatives while in the exercise of performance of the rights or duties under this Contract. The indemnity provided for in this paragraph does not apply to any liability resulting from the negligence of the Owner, officers or employees, separate Contractors or assigned contractors, in instances where such negligence causes personal injury, death or property damage. IN THE EVENT CONTRACTOR AND OWNER ARE FOUND JOINTLY LIABLE BY A COURT OF COMPETENT JURISDICTION, LIABILITY WILL BE APPORTIONED COMPARATIVELY IN ACCORDANCE WITH THE LAWS OF THE STATE OF TEXAS, WITHOUT WAIVING ANY GOVERNMENTAL IMMUNITY AVAILABLE TO THE STATE UNDER TEXAS LAW AND WITHOUT WAIVING ANY DEFENSES OF THE PARTIES UNDER TEXAS LAW.

3.3.10.1 The provisions of this Indemnification are solely for the benefit of the parties hereto and not intended to create or grant any rights, contractual or otherwise, to any other person or entity.
3.3.10.2 Promptly advise the Owner in writing of any claim or demand against the Owner or the Contractor known to the Contractor related to or arising out of the Contractor's activities under this Contract.

3.3.11 Ancillary Areas. Operate and maintain operations and associated storage areas at the site of the Work in accordance with the following:

3.3.11.1 Confine all Contractor operations, including storage of materials and employee parking upon the Site of Work, to areas designated by the Owner.

3.3.11.2 The Contractor may erect, at its own expense, temporary buildings that will remain its property. Remove such buildings and associated utility service lines upon completion of the Work, unless the Contractor requests and the Owner provides written consent that it may abandon such buildings and utilities in place.

3.3.11.3 Use only established roadways or construct and use such temporary roadways as may be authorized by the Owner. Do not allow load limits of vehicles to exceed the limits prescribed by appropriate regulations or law. Provide protection to road surfaces, curbs, sidewalks, trees, shrubbery, sprinkler systems, drainage structures and other like existing improvements to prevent damage and repair any damage thereto at the expense of the Contractor.

3.3.11.4 The Owner may restrict the Contractor's entry to the site to specifically assigned entrances and routes.

3.3.12 Separate Contracts. Additional Contractor responsibilities when the Owner awards separate Contracts

3.3.12.1 The Owner reserves the right to award other contracts in connection with other portions of the Project under these or similar contract conditions.

3.3.12.2 The Owner reserves the right to perform operations related to the Project with the Owner's own forces.

3.3.12.3 Under a system of separate contracts, the conditions described herein continue to apply except as may be amended by change order.
Article 4. Historically Underutilized Business (HUB) Subcontracting Plan

4.1. General Description. The purpose of the Historically Underutilized Business (HUB) Program is to promote equal business opportunities for economically disadvantaged persons (as defined by Tex. Gov't Code, Chapter 2161) to contract with the State of Texas in accordance with the goals specified in the State of Texas Disparity Study. The HUB Program annual procurement utilization goals per 1 Texas Administrative Code (TAC) §111.13 are: 11.9 percent for heavy construction other than building contracts, 26.1 percent for all building construction, including general contractors and operative builders contracts, 57.2 percent for all special trade construction contracts, 20 percent for professional services contracts, 33 percent for all other services contracts and 12.6 percent for commodities contracts.

4.1.1 State agencies are required by statute to make a good faith effort to assist HUBs in participating in contract awards issued by the State. 1 TAC §111.11-111.28, outline the state's policy to encourage outreach to and potential utilization of HUBs in state contracting opportunities through race, ethnic and gender neutral means.

4.1.2 A Contractor who contracts with the State in an amount of $100,000 is required to make a good faith effort to award subcontracts to HUBs in accordance with 1 TAC §111.14 by submitting a HUB Subcontracting Plan at the time of bidding and complying with the HUB Subcontracting Plan after it is accepted by the Owner and during the term of the contract.

4.2. Compliance with Approved HUB Subcontracting Plan. Contractor, having been awarded this Contract in part by complying with the HUB Program statute and rules, hereby covenants to continue to comply with the HUB Program as follows:

4.2.1 Prior to substituting a Subcontractor, promptly notify the Owner in the event a change is required for any reason to the accepted HUB Subcontracting Plan.

4.2.2 Conduct the good faith effort activities required and provide the Owner with necessary documentation to justify approval of a change to the approved HUB Subcontracting Plan.

4.2.3 Cooperate in the execution of a Change Order or such other approval of the change in the HUB Subcontracting Plans as the Contractor and Owner may agree to.

4.2.4 Maintain and make available to Owner upon request business records documenting compliance with the accepted HUB Subcontracting Plan.

4.2.5 Upon receipt of payment for performance of Work, submit to Owner a compliance report, in the format required by the Owner that demonstrates Contractor's performance of the HUB Subcontracting Plan.
4.2.6 Promptly and accurately explain and provide supplemental information to Owner to assist in the Owner’s investigation of the Contractor’s good faith effort to fulfill the HUB Subcontracting Plan and the requirements under 1 TAC §111.14.

4.3. Failure to Demonstrate Good Faith Effort. Upon a determination by Owner that Contractor has failed to demonstrate a good faith effort to fulfill the HUB Subcontracting Plan or any contract covenant detailed above, the Owner may, in addition to all other remedies available to it, report the failure to perform to the Texas Building and Procurement Commission Vendor Performance and may bar the Contractor from future contracting opportunities with the Owner.
Article 5. Bonds & Insurance

5.1. Construction Bonds.

The Contractor is required to tender to Owner, prior to commencing the Work, performance and payment bonds, as required by Tex. Gov't Code, Chapter 2253.

5.1.1. A Performance Bond is required if the Contract Price is in excess of $100,000. The Performance Bond is solely for the protection of the Owner. The Performance Bond is to be for the Contract Sum to guarantee the faithful performance of the Work in accordance with the Contract Documents. The form of the bond shall be approved by the Attorney General of Texas. The Performance Bond shall be effective through the Contractor's warranty period.

5.1.2. A Payment Bond is required if the Contract Price is in excess of $25,000. The payment bond is to be for the Contract Sum and is payable to the Owner solely for the protection and use of payment bond beneficiaries who have a direct contractual relationship with the Contractor or a Subcontractor. The form of the bond shall be approved by the Attorney General of Texas.

5.1.3. Bond Requirements. Each bond shall be executed by a corporate surety or sureties authorized to do business in the State of Texas and acceptable to the Owner, on the Owner's form, and in compliance with the relevant provisions of the Texas Insurance Code. If any bond is for more than 10 percent of the surety's capital and surplus, the Owner may require certification that the company has reinsured the excess portion with one or more reinsurers authorized to do business in the State. A reinsurer may not reinsure for more than 10 percent of its capital and surplus. If a surety upon a bond loses its authority to do business in the State, the Contractor shall, within thirty (30) days after such loss, furnish a replacement bond at no added cost to the Owner.

5.1.4. Power of Attorney. Each bond shall be accompanied by a valid Power-of-Attorney (issued by the surety company and attached, signed and sealed with the corporate embosses seal, to the bond) authorizing the attorney in fact who signs the bond to commit the company to the terms of the bond, and stating any limit in the amount for which the attorney can issue a single bond.

5.1.5. Bond Indemnification. The process of requiring and accepting bonds and making claims thereunder shall be conducted in compliance with Tex. Gov't Code, Chapter 2253. IF FOR ANY REASON A STATUTORY PAYMENT OR PERFORMANCE BOND IS NOT HONORED BY THE SURETY, THE CONTRACTOR SHALL FULLY INDEMNIFY AND HOLD THE OWNER HARMLESS OF AND FROM ANY COSTS, LOSSES, OBLIGATIONS OR LIABILITIES IT INCURS AS A RESULT.
5.1.6. **Furnishing Bond Information.** Owner shall furnish certified copies of the payment bond and the related Contract to any qualified person seeking copies who complies with Tex. Gov't Code, §2253.026.

5.1.7. **Claims on Payment Bonds.** Claims on payment bonds must be sent directly to the Contractor and his surety in accordance with Tex. Gov't Code § 2253.041. All Payment Bond claimants are cautioned that no lien exists on the funds unpaid to the Contractor on such Contract, and that reliance on notices sent to the Owner may result in loss of their rights against the Contractor and/or his surety. The Owner is not responsible in any manner to a claimant for collection of unpaid bills, and accepts no such responsibility because of any representation by any agent or employee.

5.1.8. **Payment Claims when Payment Bond not Required.** The rights of Subcontractors regarding payment are governed by Tex. Prop. Code, §§53.231 – 53.239 when the value of the Contract between the Owner and the Contractor is less than $25,000.00. These provisions set out the requirements for filing a valid lien on funds unpaid to the Contractor as of the time of filing the claim, actions necessary to release the lien and satisfaction of such claim.

5.1.9 **Sureties** shall be listed on the US Department of the Treasury's Listing Approved Sureties stating companies holding Certificates of Authority as acceptable sureties on Federal Bonds and acceptable reinsuring companies (Department Circular 570).

5.2. **Insurance Requirements.**

The Contractor shall carry insurance in the types and amounts indicated in this Article for the duration of the Contract. The required insurance shall include coverage for Owner's property in the care, custody and control of Contractor prior to construction, during construction and during the warranty period. The insurance shall be evidenced by delivery to the Owner of certificates of insurance executed by the insurer or its authorized agent stating coverages, limits, expiration dates and compliance with all applicable required provisions. Upon request, the Owner, and/or its agents, shall be entitled to receive without expense, copies of the policies and all endorsements. The Contractor shall update all expired policies prior to submission for monthly payment. Failure to update policies shall be reason for withholding of payment until renewal is provided to the Owner.

5.2.1. The Contractor shall provide and maintain the insurance coverage with the minimum amounts described below until the end of the warranty period unless otherwise stated in Supplementary General Conditions. Failure to maintain insurance coverage, as required, is grounds for Suspension of Work for Cause pursuant to Article 14. The Contractor will be notified of the date on which the Builder’s Risk insurance policy may be terminated through Substantial Completion Notices, Acceptance Notices and/or other means as deemed appropriate by the Owner.
5.2.2. Coverage shall be written on an occurrence basis by companies authorized and admitted to do business in the State of Texas and rated A- or better by A.M. Best Company or otherwise acceptable to Owner.

5.2.2.1. **Insurance coverage required includes:**

5.2.2.1.1. **Workers' Compensation.** Insurance with limits as required by the Texas Workers' Compensation Act, with the policy endorsed to provide a waiver of subrogation as to the Owner, Employer's Liability insurance of not less then:

- $100,000 each accident
- $100,000 disease each employee
- $500,000 disease policy limit

5.2.2.1.2. **Commercial General Liability Insurance.** Including Independent Contractor's liability, Products and Completed Operations and Contractual Liability, covering, but not limited to, the liability assumed under the indemnification provisions of this contract, fully insuring Contractor's (or Subcontractors) liability for bodily injury and property damage with a combined bodily injury (including death) and property damage minimum limit of:

- $1,000,000 per occurrence
- $1,000,000 general aggregate
- $1,000,000 products and completed operations aggregate

Coverage shall be on an "occurrence" basis.

The policy shall include coverage extended to apply to completed operations and explosion, collapse, underground hazards. The policy shall include endorsement CG2503 Amendment-Aggregate Limits of Insurance (Per Project) or its equivalent.

5.2.2.1.3. **Asbestos Abatement Liability Insurance,** including coverage for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos containing materials. *This requirement applies if the Work or the Project includes asbestos containing materials.*

The Combined single limit for bodily injury and property damage will be a minimum of $1,000,000 per occurrence.

*Specific Requirement for Claims-Made Form: Required period of coverage will be determined by the following formula: Continuous coverage for life of the contract, plus one (1) year (to provide coverage for the warranty period),
and an extended discovery period for a minimum of five (5) years which shall begin at the end of the warranty period.

If this contract is for asbestos abatement only, the All-Risk Builder's Risk or All-Risk Installation Floater (e) is not required.

5.2.2.1.4. Comprehensive Automobile Liability Insurance, covering owned, hired, and non-owned vehicles, with a combined bodily injury (including death) and property damage minimum limit of $1,000,000 per occurrence. No aggregate shall be permitted for this type of coverage. Such insurance is to include coverage for loading and unloading hazards.

5.2.2.1.5. All Risk Builder's Risk Insurance (or All Risk Installation Floater for instances in which the project involves solely the installation of equipment). Coverage shall be All-Risk, including, but not limited to, Fire, Extended Coverage, Vandalism and Malicious Mischief, Flood, Earthquake, Theft and damage resulting from faulty workmanship, design or materials. If Builder's Risk, limit shall be equal to 100 percent of the contract. If Installation Floater, limit shall be equal to 100 percent of the contract cost. The policy shall be written jointly in the names of the Owner, the Contractor, Subcontractors and, Subcontractors shall be named as additional insured. The policy shall have endorsements as follows:

5.2.2.1.5.1. This insurance shall be specific as to coverage and not contributing insurance with any permanent insurance maintained on the property.

5.2.2.1.5.2. This insurance shall not contain an occupancy clause suspending or reducing coverage should the Owner occupy, or begin beneficial occupancy before the Owner has accepted final completion.

5.2.2.1.5.3. Loss, if any, shall be adjusted with and made payable to the Owner as Trustee for the insureds as their interests may appear; the right of subrogation under the Builder's Risk policy shall be waived as to the Owner. The Owner shall be named as Loss Payee. For renovation projects or projects that involve portions of work contained within an existing structure, refer to Special Conditions for possible additional Builder's Risk insurance requirements.

5.2.2.1.6. "Umbrella" Liability Insurance. The Contractor shall obtain, pay for and maintain umbrella liability insurance during the contract term, insuring the Contractor (or Subcontractor) for
an amount of not less than amount specified in the Supplementary General Conditions or Special Conditions that provides coverage at least as broad as and applies in excess and follows form of the primary liability coverages required hereinabove. The policy shall provide "drop down" coverage where underlying primary insurance coverage limits are insufficient or exhausted.

If this contract is for asbestos abatement only, the "Umbrella" Excess Liability is not required

5.2.3. Policies must include the following clauses, as applicable:

5.2.3.1. This insurance shall not be canceled, materially changed, or non-renewed until after thirty (30) days prior written notice has been given to the Owner.

5.2.3.2. It is agreed that the Contractor’s insurance shall be deemed primary with respect to any insurance or self insurance carried by the Owner for liability arising out of operations under the Contract with the Owner.

5.2.3.3. The Owner, its officials, directors, employees, representatives, and volunteers are added as additional insureds as respects operations and activities of, or on behalf of the named insured performed under contract with the Owner. The additional insured status must cover completed operations as well. This is not applicable to the workers’ compensation policy.

5.2.3.4. The workers’ compensation and employers’ liability policy will provide a waiver of subrogation in favor of the Owner.

5.2.4. Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall require each Subcontractor performing work under the Contract, at the Subcontractor’s own expense, to maintain during the term of the Contract, the same stipulated minimum insurance including the required provisions and additional policy conditions as shown above. As an alternative, the Contractor may include its Subcontractors as additional insureds on its own coverage as prescribed under these requirements. The Contractor's certificate of insurance shall note in such event that the Subcontractors are included as additional insureds and that Contractor agrees to provide Workers' Compensation for the Subcontractors and their employees. The Contractor shall obtain and monitor the certificates of insurance from each Subcontractor in order to assure compliance with the insurance requirements. The Contractor must retain the certificates of insurance for the duration of the Contract plus 5 years and shall have the responsibility of enforcing these insurance requirements among its subcontractors. The Owner shall be entitled, upon request and without expense, to receive copies of these certificates.
5.2.5. Workers' Compensation Insurance Coverage must meet the statutory requirements of the Tex. Lab. Code, §401.011(44) and specific to construction projects for public entities as required by Tex. Lab. Code, §406.096.
Article 6. Contract Documents

6.1. Drawings and Specifications

6.1.1 Copies Furnished. The Contractor will be furnished, free of charge, the number of complete sets of the Drawings and Specifications as provided in the Supplementary General Conditions or Special Conditions. Additional complete sets of Drawings and Specifications, if requested, will be furnished at reproduction cost to the one requesting such additional sets.

6.1.2 Ownership of Drawings and Specifications. All Drawings, Specifications and copies thereof furnished by the AE are to remain A/E's property. These documents are not to be used on any other project, and with the exception of one Contract set for each party to the Contract, are to be returned to the Architect/Engineer, upon request, following completion of the Work.

6.1.3 Interrelation of Documents. The Contract Documents as referenced in the Agreement between the Owner and the Contractor are complimentary, and what is required by one shall be as binding as if required by all.

6.1.4 Resolution of Conflicts in Documents. Where conflicts may exist between and/or within the Contract Documents, the higher quality, greater quantity, more restrictive, and/or more expensive requirement shall be the basis of Contractor pricing, and the Contractor shall notify the AE and the ODR for resolution of the issue prior to executing the work in question.

6.1.5 Contractor's Duty to Review Contract Documents. In order to facilitate its responsibilities for completion of the Work in accordance with and as reasonably inferable from the Contract Documents, prior to pricing or commencing the Work, the Contractor shall examine and compare the Contract Documents, information furnished by the Owner, relevant field measurements made by the Contractor and any visible or reasonably anticipated conditions at the site affecting the Work. This duty extends throughout the construction phase prior to commencing each particular work activity and/or system installation.

6.1.6 Discrepancies and Omissions in Drawings and Specifications

6.1.6.1 Promptly report to the ODR and to the AE the discovery of any apparent error, omission or inconsistency in the Contract Documents prior to execution of the Work.

6.1.6.2 It is recognized that the Contractor is not acting in the capacity of a licensed design professional, unless it is performing as a Design-Build firm.

6.1.6.3 It is further recognized that the Contractor's examination of contract documents is to facilitate construction and does not create an
affirmative responsibility to detect errors, omissions or inconsistencies or to ascertain compliance with applicable laws, building codes or regulations, unless it is performing as a Design-Build firm or a Construction Manager-at-Risk.

6.1.6.4 When performing as a Design-Build firm, the Contractor has sole responsibility for discrepancies, errors, and omissions in the drawings and specifications.

6.1.6.5 When performing as a Construction Manager-at-Risk, the Contractor has a shared responsibility for discovery and resolution of discrepancies, errors, and omissions in the Contract Documents. In such case, the Contractor’s responsibility pertains to review, coordination, and recommendation of resolution strategies within budget constraints, but does not establish a liability for design.

6.1.6.6 The Contractor has no liability for errors, omissions, or inconsistencies unless the Contractor knowingly failed to report a recognized problem to the Owner or the Work is executed under a Design-Build or Construction Manager-at-Risk contract as outlined above. Should the Contractor fail to perform the examination and reporting obligations of these provisions, the Contractor is responsible for avoidable costs, direct, and/or consequential damages.

6.2 Requirements for Record Documents

Maintain at the Site one copy of all Drawings, Specifications, addenda, approved Submittals, Contract modifications, and all Project correspondence. Keep current and maintain Drawings and Specifications in good order with postings and markings to record actual conditions of Work and show and reference all changes made during construction. Provide Owner and AE access to these documents.

6.2.1 Maintain this record set of Drawings and Specifications which reflect the "As Constructed" conditions and representations of the Work performed, whether it be directed by addendum, Change Order or otherwise. Make available all records prescribed herein for reference and examination by the Owner and its representatives and agents.

6.2.2 Update the "As-Constructed" Drawings and Specifications monthly prior to submission of periodic partial pay estimates. Failure to maintain such records constitutes cause for denial of a progress payment otherwise due.

6.2.3 Prior to requesting Substantial Completion Inspection by the ODR and AE, furnish a complete set of the marked up "As-Constructed" set maintained at the site and one photocopy of same. Concurrently with furnishing these record drawings, furnish a preliminary copy of each operating and maintenance manual (O&M) required by the Contract Documents, for review by the AE and the ODR.
Uniform General Conditions

6.2.4 Once determined acceptable, provide mylar prints of professionally drafted “As-Constructed” drawings, along with electronic copy on CD, “As-Constructed” specifications in bound volume(s) along with electronic copy on CD, two sets of photocopies or prints of the mylar “As-Constructed” drawings, two sets of operating and maintenance manuals, two sets of approved submittals, and other record documents as required elsewhere in the Contract Documents.
Uniform General Conditions

Article 7. Safety

7.1. General. It is the duty and responsibility of the Contractor and all of its Subcontractors to be familiar with, enforce and comply with all requirements of Public Law 91-596, 29 U.S.C. §§651 et. seq., the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto. The Contractor shall prepare a Safety Plan specific to the Project and submit it to the ODR and AE prior to commencing Work. In addition, the Contractor and all of its Subcontractors shall comply with all applicable laws and regulations of any public body having jurisdiction for safety of persons or property to protect them from damage, injury or loss and erect and maintain all necessary safeguards for such safety and protection.

7.2. Notices. The Contractor shall provide notices as follows:

7.2.1 Notify owners of adjacent property including those that own or operate utility services and/or underground facilities, and utility owners, when prosecution of the Work may affect them or their facilities, and cooperate with them in the protection, removal, relocation and replacement, and access to their facilities and/or utilities.

7.2.2 Coordinate the exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the site in connection with laws and regulations. Maintain a complete file of MSDS for all materials in use on site throughout the construction phase and make such file available to the Owner and its agents as requested.

7.3. Emergencies. In any emergency affecting the safety of persons or property, the Contractor shall act to minimize, mitigate, and prevent threatened damage, injury or loss.

7.3.1 Have authorized agents of Contractor respond immediately upon call at anytime of day or night when circumstances warrant the presence of Contractor to protect the Work or adjacent property from damage or to take such action pertaining to the Work as may be necessary to provide for the safety of the public.

7.3.2 Give the ODR and AE prompt notice of all such events.

7.3.3 If Contractor believes that any changes in the Work or variations from Contract Documents have been caused by its emergency response, promptly notify the Owner within 72 hours of the emergency response event.

7.3.4 Should Contractor fail to respond, Owner is authorized to direct other forces to take action as necessary and Owner may deduct any cost of remedial action from funds otherwise due the Contractor.

7.4. Injuries. In the event of an incident or accident involving outside medical care for an individual on or near the Work, Contractor shall notify the ODR
and other parties as may be directed within twenty-four (24) hours of the event.

7.4.1 Record the location of the event and the circumstances surrounding it, by using photography or other means, and gather witness statements and other documentation which describes the event.

7.4.2 Supply the ODR and AE with an incident report no later than 36 hours after the occurrence of the event. In the event of a catastrophic incident (one fatality or three workers hospitalized), barricade and leave intact the scene of the incident until all investigations are complete. A full set of incident investigation documents, including facts, finding of cause, and remedial plans shall be provided within one week after occurrence, unless otherwise directed by legal counsel. Contractor shall provide the ODR with written notification within one week of such catastrophic event if legal counsel delays submission of full report.

7.5. **Environmental Safety.** Upon encountering any previously unknown potentially hazardous material, or other materials potentially contaminated by hazardous material, Contractor shall immediately stop work activities impacted by the discovery, secure the affected area, and notify the ODR immediately.

7.5.1 Bind all Subcontractors to the same duty.

7.5.2 Upon receiving such notice, the ODR will promptly engage qualified experts to make such investigations and conduct such tests as may be reasonably necessary to determine the existence or extent of any environmental hazard. Upon completion of this investigation, the ODR will issue a written report to the Contractor identifying the material(s) found and indicate any necessary steps to be taken to treat, handle, transport or dispose of the material.

7.5.3 The Owner may hire third-party contractors to perform any or all such steps.

7.5.4 Should compliance with the ODR's instructions result in an increase in the Contractor's cost of performance, or delay the Work, the Owner will make an equitable adjustment to the Contract price and/or the time of completion, and modify the Contract in writing accordingly.

7.6. **Trenching Plan.** When the project requires excavation which either exceeds a depth of four feet, or results in any worker's upper body being positioned below grade level, the Contractor is required to submit a trenching plan to the ODR prior to commencing trenching operations. The plan is required to be prepared and sealed by a professional engineer registered in the State of Texas, and employed by the Contractor. Said engineer cannot be anyone who is otherwise either directly or indirectly engaged on this project.
Article 8. Quality Control

8.1. Materials & Workmanship. The Contractor shall execute Work in a good and workmanlike matter in accordance with the Contract Documents. The Contractor shall develop and provide a Quality Control Plan specific to this project and acceptable to the Owner. Where Contract Documents do not specify quality standards, complete and construct all Work in compliance with generally accepted construction industry standards. Unless otherwise specified, incorporate all new materials and equipment into the Work under the Contract.

8.2. Testing

8.2.1 Contractor Testing. The Contractor is responsible for coordinating and paying for all routine and special tests required to confirm compliance with quality and performance requirements of the Contract Documents. This "quality control" testing shall include any particular testing required by the Specifications and the following general tests.

8.2.1.1 Any test of basic material or fabricated equipment included as part of a submittal for a required item in order to establish compliance with the Contract Documents.

8.2.1.2 Any test of basic material or fabricated equipment offered as a substitute for a specified item on which a test may be required in order to establish compliance with the Contract Documents.

8.2.1.3 Routine, preliminary, start-up, pre-functional and operational testing of building equipment and systems as necessary to confirm operational compliance with requirements of the Contract Documents.

8.2.1.4 All subsequent tests on original or replaced materials conducted as a result of prior testing failure.

8.2.2 Owner Testing. The Owner reserves the right to subject materials and systems incorporated into the Project to routine tests as may be specified or as deemed necessary by the ODR or the AE to insure compliance with the quality and/or performance requirements of the Contract Documents and/or with laws, ordinances, rules, regulations and/or orders of any public authority having jurisdiction. The results of such "quality assurance" testing will be provided to the Contractor and, to the extent provided, the Contractor may rely on findings.

8.2.3 All testing shall be performed in accordance with standard test procedures by an accredited laboratory, or special consultant as appropriate, acceptable to the Owner. Results of all tests shall be provided promptly to the ODR, Architect/Engineer and the Contractor.

8.2.4 Non-Compliance (Test Results). Should any of the tests indicate that a material and/or system does not comply with the contract requirements, the burden of proof remains with the Contractor, subject to:
8.2.4.1 Contractor selection and submission of the laboratory for Owner acceptance.

8.2.4.2 Acceptance by the Owner of the quality and nature of tests.

8.2.4.3 All tests taken in the presence of the Architect/Engineer and/or ODR, or their representatives.

8.2.4.4 If tests confirm that the material/systems comply with Contract Documents, the Owner will pay the cost of the test.

8.2.4.5 If tests reveal noncompliance, the Contractor will pay those laboratory fees and costs of that particular test and all future tests, of that failing Work, necessary to eventually confirm compliance with Contract Documents.

8.2.4.6 Proof of noncompliance with the Contract Documents will make the Contractor liable for any corrective action which the ODR determines appropriate, including complete removal and replacement of non-compliant work or material.

8.2.5 Notice of Testing. The Contractor shall give the ODR and the AE timely notice of its readiness and the date arranged so the ODR and AE may observe such inspection, testing or approval.

8.2.6 Test Samples. The Contractor is responsible for providing samples of sufficient size for test purposes and for coordinating such tests with their Work Progress Schedule to avoid delay.

8.2.7 Covering Up Work - If the Contractor covers up any Work without providing the Owner an opportunity to inspect, the Contractor shall, if requested by ODR, uncover and recover the work at Contractor’s expense.

8.3 Submittals

8.3.1 Contractor’s Submittals. Submit with reasonable promptness consistent with the Project Schedule and in orderly sequence all Shop Drawings, Samples, or other information required by the Contract Documents, or subsequently required by Change Order. Prior to submitting, the Contractor shall review each submittal for compliance with Contract Documents and certify by approval stamp affixed to each copy. Submittal data presented without the Contractor’s certification will be returned without review or comment, and any delay resulting from such certification is the Contractor’s responsibility.

8.3.1.1 Within twenty-one (21) calendar days of the effective date of the Notice To Proceed with construction, submit to the ODR, and the AE, a submittal schedule/register, organized by specification section, listing all items to be furnished for review and approval by the Architect/Engineer and Owner. The list shall include shop drawings, manufacturer’s literature, certificates of compliance,
materials samples, materials colors, guarantees, and all other items identified throughout the specifications.

8.3.1.2 Indicate the type of item, contract requirements reference, and Contractor’s scheduled dates for submitting the item along with the requested dates for approval answers from the Architect/Engineer and Owner. The submittal register shall indicate the projected dates for procurement of all included items and shall be updated at least monthly with actual approval and procurement dates. Show and allow a minimum of thirty (30) calendar days duration after receipt by the Architect/Engineer and ODR for review and approval. If re-submittal required, allow a minimum of an additional fifteen (15) calendar days for review. Submit the updated submittal register with each request for progress payment. The Owner may establish routine review procedures and schedules for submittals at the preconstruction conference and/or elsewhere in the Contract Documents.

8.3.1.3 Coordinate the submittal register with the Work Progress Schedule. Do not schedule Work requiring a submittal to begin prior to scheduling review and approval of the related submittal. Revise and/or update both schedules monthly to ensure consistency and current project data. Provide to the ODR the updated submittal register and schedule with each application for progress payment. Refer to requirements for the Work Progress Schedule for inclusion of procurement activities therein. Regardless, the submittal register shall identify dates submitted and returned and shall be used to confirm status and disposition of particular items submitted, including approval or other action taken and other information not conveniently tracked through the Work Progress Schedule.

8.3.1.4 By submitting Shop Drawings, Samples or other required information, the Contractor represents and certifies that they have determined and verified all applicable field measurements, field construction criteria, materials, catalog numbers and similar data; and has checked and coordinated each Shop Drawing and Sample with the requirements of the Work and the Contract Documents.

8.3.2 Review of Submittals. AE and ODR review is only for conformance with the design concept and the information provided in the Contract Documents. Responses to submittals will be in writing. The approval of a separate item does not indicate approval of an assembly in which the item functions. The approval of a submittal does not relieve the Contractor of responsibility for any deviation from the requirements of the Contract unless the Contractor informs the AE and ODR of such deviation in a clear, conspicuous, and written manner on the submittal transmittal and at the time of submission, and obtains the Owner’s written specific approval of the particular deviation.
8.3.3 **Correction and Resubmission.** Make any corrections required to a submittal and resubmit the required number of corrected copies promptly so as to avoid delay, until submittal approval. Direct attention in writing to the AE and the ODR, when applicable, to any new revisions other than the corrections requested on previous submissions.

8.3.4 **Limits on Shop Drawing Approvals.** The Contractor shall not commence any Work requiring a submittal until approval of the submittal. Construct all such work in accordance with approved submittals. Approval of Shop Drawings and Samples is not authorization to Contractor to perform extra work or changed work unless authorized through a Change Order. The AE’s and ODR’s approval, if any, does not relieve Contractor from responsibility for defects in the Work resulting from errors or omissions of any kind on the submittal, regardless of any approval action.

8.3.5 **No Substitutions Without Approval.** The ODR and the AE may receive and consider the Contractor's request for substitution when the Contractor agrees to reimburse the Owner for review costs and satisfies 8.3.5.1, 8.3.5.2, and 8.3.5.3 in combination with one or more of the items in 8.3.5.4 through 8.3.5.11 of the following conditions, as determined by the Owner. If the Contractor does not satisfy these conditions, the ODR and AE will return the request without action except to record noncompliance with these requirements. The Owner will not consider the request if the Contractor cannot provide the product or method because of failure to pursue the Work promptly or coordinate activities properly.

8.3.5.1 The Contract Documents do not require extensive revisions.

8.3.5.2 Proposed changes are in keeping with the general intent of the Contract Documents and the design intent of the AE and do not result in an increase in cost to the Owner.

8.3.5.3 The request is timely, fully documented, and properly submitted.

8.3.5.4 The Contractor cannot provide the specified product, assembly or method of construction within the Contract Time.

8.3.5.5 The request directly relates to an "or-equal" clause or similar language in the Contract Documents.

8.3.5.6 The request directly relates to a "product design standard" or "performance standard" clause in the Contract Documents.

8.3.5.7 The requested substitution offers the Owner a substantial advantage in cost, time, energy conservation or other considerations, after deducting additional responsibilities the Owner must assume.

8.3.5.8 The specified product or method of construction cannot receive necessary approval by an authority having jurisdiction, and the ODR can approve the requested substitution.
8.3.5.9 The Contractor cannot provide the specified product, assembly or method of construction in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.

8.3.5.10 The Contractor cannot coordinate the specified product, assembly or method of construction with other materials and where the Contractor certifies they can coordinate the proposed substitution.

8.3.5.11 The specified product, assembly or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.

8.3.6 Unauthorized Substitutions at Contractor’s Risk. The Contractor is financially responsible for any additional costs or delays resulting from using materials, equipment or fixtures other than those specified. The Contractor shall reimburse the Owner for any increased design or contract administration costs resulting from such unauthorized substitutions.

8.4 Field Mock-up

8.4.1 Mockups shall be constructed prior to commencement of a specified scope of work to confirm acceptable workmanship.

8.4.1.1 As a minimum, field mock-ups shall be constructed for roofing systems, exterior veneer / finish systems, glazing systems, and any other Work requiring a mock-up as identified throughout the Contract Documents. Mockups for systems not part of the project scope shall not be required.

8.4.1.2 Mock-ups may be incorporated into the Work if allowed by the Contract Documents and if acceptable to the ODR. If mock-ups are freestanding, they shall remain in place until otherwise directed by the Owner.

8.4.1.3 The Contractor shall include field mock-ups in their Work Progress Schedule and shall notify the ODR and Architect/Engineer of readiness for review sufficiently in advance to coordinate review without delay.

8.5 Inspection During Construction

8.5.1 The Contractor shall provide sufficient, safe, and proper facilities, including equipment as necessary for safe access, at all reasonable times for observation and/or inspection of the Work by the Owner and its agents.

8.5.2 The Contractor shall not cover up any work with finishing materials or other building components prior to providing the Owner and its agents an opportunity to perform an inspection of the Work.
8.5.2.1 Should corrections of the Work be required for approval, do not cover up corrected Work until the Owner indicates approval.

8.5.2.2 Provide notification of at least five (5) working days or otherwise as mutually agreed, to the ODR of the anticipated need for a cover up inspection. Should the ODR fail to make the necessary inspection within the agreed period, the Contractor may proceed with cover up Work, but is not relieved of responsibility for Work to comply with requirements of the Contract Documents.
Uniform General Conditions

Article 9. Construction Schedules

9.1. **Contract Time.** TIME IS AN ESSENTIAL ELEMENT OF THE CONTRACT. The Contract Time is the time between the dates indicated in the Notice to Proceed for commencement of the Work and for achieving Substantial Completion and Final Completion. The Contract Time can be modified only by Change Order. Failure to achieve Substantial Completion within the Contract Time, Final Completion within thirty (30) days following Substantial Completion or as otherwise agreed to in writing will cause damage to the Owner and may subject the Contractor to Liquidated Damages as provided in the Contract Documents.

9.2. **Notice to Proceed.** The Owner will issue a Notice to Proceed which shall state the dates for beginning Work and for achieving Substantial Completion and Final Completion of the Work.

9.3. **Work Progress Schedule.** Refer to Special Conditions and Division 1 General Administration Specifications for additional schedule requirements. Unless indicated otherwise in those documents, Contractor shall submit their initial Work Progress Schedule for the Work in relation to the entire Project not later than twenty-one (21) days after the effective date of the Notice to Proceed to the ODR and the AE. . Unless otherwise indicated in the Contract Documents, the Work Progress Schedule shall be computerized Critical Path Method (CPM) with full reporting capability. This initial schedule shall indicate the dates for starting and completing the various aspects required to complete the Work, including mobilization, procurement, installation, testing, inspection, and acceptance of all the Work of the Contract. When acceptable to the Owner, the initially accepted schedule shall be the Baseline Schedule for comparison to actual conditions throughout the contract duration.

9.3.1 **Schedule Requirements.** Submit electronic and paper copy of the initial Work Progress Schedule reflecting accurate and reliable representations of the planned progress of the Work, the Work to date if any, and of the Contractor’s actual plans for its completion. Organize and provide adequate detail so the Schedule is capable of measuring and forecasting the effect of delaying events on completed and uncompleted activities.

9.3.1.1 Re-submit initial Schedule as required to address review comments from AE and ODR until such Schedule is accepted as the Baseline Schedule.

9.3.1.2 Submittal of a schedule, schedule revision or schedule update constitutes the Contractor’s representation to the Owner of the accurate depiction of all progress to date and that the Contractor will follow the schedule as submitted in performing the Work.

9.3.2 **Schedule Updates.** Update the Work Progress Schedule and the Submittal Schedule monthly, as a minimum, to reflect progress to date.
and current plans for completing the Work, and submit paper and electronic copy of the update to the AE and ODR as directed. The Owner has no duty to make progress payments unless accompanied by the updated Work Progress Schedule. Show the anticipated date of completion reflecting all extensions of time granted through Change Order as of the date of the update. The Contractor may revise the Progress Schedule logic only with the Owner’s concurrence when in the Contractor’s judgment it becomes necessary for the management of the Work. Identify all proposed changes to schedule logic to Owner and to the AE via an Executive Summary accompanying the updated schedule for review prior to implementation of revisions.

9.3.3 The Work Progress Schedule is for the Contractor’s use in managing the Work and submittal of the Schedule, and successive updates or revisions, is for the information of the Owner and to demonstrate that the Contractor has complied with requirements for planning the Work. The Owner’s acceptance of a schedule, schedule update or revision constitutes the Owner’s agreement to coordinate its own activities with the Contractor’s activities as shown on the schedule.

9.3.3.1 Acceptance of the Work Progress Schedule, or update and/or revision thereto does not indicate any approval of the Contractor’s proposed sequences and duration.

9.3.3.2 Acceptance of a Work Progress Schedule update or revision indicating early or late completion does not constitute the Owner’s consent, alter the terms of the Contract, or waive either the Contractor’s responsibility for timely completion or the Owner’s right to damages for the Contractor’s failure to do so.

9.3.3.3 The Contractor’s scheduled dates for completion of any activity or the entire Work do not constitute a change in terms of the contract. Change Orders are the only method of modifying the completion Date(s) and Contract time.

9.4. Ownership of Float. Unless indicated otherwise in the Contract Documents, the Contractor shall develop the schedule and their execution plan to provide a minimum of 10 percent total float at the project level at acceptance of the Baseline Schedule. Float time contained in the Work Progress Schedule is not for the exclusive benefit of the Contractor or the Owner, but belongs to the Project and may be consumed by either party as needed on a first-used basis.

9.5. Completion of Work. The Contractor is accountable for completing the Work in the time stated in the Contract, or as otherwise amended by Change Order.

9.5.1 If, in the judgment of the Owner, the work is behind schedule and the rate of placement of work is inadequate to regain scheduled progress to insure timely completion of the entire work or a separable portion thereof, the Contractor, when so informed by the Owner, shall immediately take action to increase the rate of work placement by:
9.5.1.1 An increase in working forces.
9.5.1.2 An increase in equipment or tools.
9.5.1.3 An increase in hours of work or number of shifts.
9.5.1.4 Expedite delivery of materials.
9.5.1.5 Other action proposed if acceptable to Owner.

9.5.2 Within ten (10) calendar days after such notice from the ODR, the Contractor shall notify the ODR in writing of the specific measures taken and/or planned to increase the rate of progress. Include an estimate as to the date of scheduled progress recovery and an updated Work Progress Schedule illustrating the Contractor’s plan for achieving timely completion of the project. Should the ODR deem the plan of action inadequate, take additional steps or make adjustments as necessary to its plan of action until it meets with the ODR’s approval.

9.6 Modification of the Contract Time

9.6.1 Delays and extension of time as hereinafter described are valid only if executed in accordance with provisions set forth in Article 11.

9.6.2 When a delay defined herein as excusable prevents the Contractor from completing the Work within the Contract Time, the Contractor is entitled to an extension of time. The Owner will make an equitable adjustment and extend the number of calendar days lost because of excusable delay, as measured by the Contractor’s progress schedule. All extensions of time will be granted in calendar days. In no event, however, will an extension of time be granted for delays that merely extend the duration of non-critical activities, or which only consume float without delaying the project completion date.

9.6.2.1 “A Weather Day” is a day on which the Contractor’s current schedule indicates Work is to be done, and on which inclement weather and related site conditions prevent the Contractor from performing seven continuous hours of Work between the hours of 7:00 a.m. and 6:00 p.m. Weather days are excusable delays. When weather conditions at the site prevent work from proceeding, immediately notify the ODR for confirmation of the conditions. At the end of each calendar month, submit to the ODR and AE a list of Weather Days occurring in that month along with documentation of the impact on critical activities. Based on confirmation by the ODR, any time extension granted will be issued by Change Order. If the Contractor and Owner cannot agree on the time extension, the Owner may issue a ULCO for fair and reasonable time extension.
9.6.2.2 **Excusable Delay.** The Contractor is entitled to an equitable adjustment of time, issued via change order, for delays caused by the following:

9.6.2.2.1 Errors, omissions and imperfections in design which the AE corrects by means of changes in the drawings and specifications.

9.6.2.2.2 Unanticipated physical conditions at the Site which the AE corrects by means of changes to the drawings and specifications or for which the ODR directs changes in the Work identified in the Contract Documents.

9.6.2.2.3 Changes in the Work that effect activities identified in the Contractor's schedule as "critical" to completion of the entire Work, if such changes are ordered by the ODR or the AE.

9.6.2.2.4 Suspension of Work for unexpected natural events (sometimes called "acts of God"), civil unrest, strikes or other events which are not within the reasonable control of the Contractor.

9.6.2.2.5 Suspension of Work for convenience of the ODR, which prevents Contractor from completing the Work within the Contract Time.

9.6.3 The Contractor's relief in the event of such delays is the time impact to the critical path as determined by analysis of the Contractor's schedule. In the event that the Contractor incurs additional direct costs because of the delay, they are to be determined pursuant to the provisions of Article 11.

9.7 **No Damages for Delay.** The Contractor has no claim for monetary damages for delay or hindrances to the work from any cause, including without limitation any act or omission of the Owner.

9.8 **Concurrent Delay.** When the completion of the Work is simultaneously delayed by an excusable delay and a delay arising from a cause not designated as excusable, the Contractor may not be entitled to a time extension for the period of concurrent delay.

9.9 **Other Time Extension Requests.** Time extensions requested in association with changes to the Work directed or requested by the Owner shall be included with the Contractor's proposed costs for such change. Time extensions requested for inclement weather are covered by paragraph 9.6.2.1 above. If the Contractor believes that the completion of the Work is delayed by a circumstance other than for changes directed to the Work or weather, they shall give the ODR written notice, stating the nature of the delay and the activities potentially affected, within five (5) calendar days after the onset of the event or circumstance giving rise to the excusable delay. Provide sufficient written evidence to document the delay. In the case of a continuing cause of delay, only one claim is necessary. State claims for extensions of time in numbers of whole or half calendar days.
9.9.1 Within ten (10) calendar days after the cessation of the delay, the Contractor shall formalize its request for extension of time in writing to include a full analysis of the schedule impact of the delay and substantiation of the excusable nature of the delay. All Changes to the Contract Time or made as a result of such claims is by Change Order, as set forth in Article 11.

9.9.2 No extension of time releases the Contractor or the Surety furnishing a performance or payment bond from any obligations under the contract or such a bond. Those obligations remain in full force until the discharge of the Contract.

9.9.3 Contents of Time Extension Requests. Provide with each Time Extension Request a quantitative demonstration of the impact of the delay on project completion time, based on the Work Progress Schedule. Include with Time Extension Requests a reasonably detailed narrative setting forth:

9.9.3.1 The nature of the delay and its cause; the basis of the Contractor’s claim of entitlement to a time extension.

9.9.3.2 Documentation of the actual impacts of the claimed delay on the critical path indicated in the Contractor’s Work Progress Schedule, and any concurrent delays.

9.9.3.3 Description and documentation of steps taken by the Contractor to mitigate the effect of the claimed delay, including, when appropriate, the modification of the Work Progress Schedule.

9.9.4 Owner’s Response. The Owner will respond to the Time Extension Request by providing to the Contractor written notice of the number of days granted, if any, and giving its reason if this number differs from the number of days requested by the Contractor.

9.9.4.1 The Owner will not grant time extensions for delays that do not affect the Contract Completion Date.

9.9.4.2 The Owner will respond to each properly submitted Time Extension Request within fifteen (15) calendar days following receipt. If the Owner cannot reasonably make a determination about the Contractor’s entitlement to a time extension within that time, the Owner will notify the Contractor in writing. Unless otherwise agreed by the Contractor, the Owner has no more than fifteen (15) additional calendar days to prepare a final response. If the Owner fails to respond within forty-five (45) calendar days from the date the Time Extension Request is received, the Contractor is entitled to a time extension in the amount requested.

9.10 Failure to Complete Work Within the Contract Time. **TIME IS OF THE ESSENSE OF THIS CONTRACT.** The Contractor’s failure to substantially complete the Work within the Contract Time or to achieve final completion as required will cause damage to the Owner. These damages are liquidated
by agreement of the Contractor and the Owner, as set forth in the Contract Documents.

9.11 Liquidated Damages. The Owner may collect Liquidated Damages due from the Contractor directly or indirectly by reducing the contract sum in the amount of Liquidated Damages stated in the Contract Documents.
Article 10. Payments

10.1. Schedule of Values. The Contractor shall submit to the ODR and the AE for acceptance a Schedule of Values, or Work Breakdown, accurately itemizing material and labor for the various classifications of the Work based on the organization of the specification sections and using the same activity names and terms as the Work Progress Schedule. The accepted Schedule of Values will be the basis for the progress payments under the Contract.

10.1.1 No progress payments will be made prior to receipt and acceptance of the Schedule of Values, provided in such detail as required by the ODR, and submitted not less than twenty-one calendar (21) days prior to the first request for payment. The Schedule of Values shall follow the order of trade divisions of the specifications and include costs for general conditions, fees, contingencies, and Owner cash allowances, if applicable, so that the sum of the items will equal the contract price. As appropriate, assign each item labor and/or material values, the subtotal thereof equaling the value of the work in place when complete.

10.1.2 The Contractor shall retain a copy of all worksheets used in preparation of its bid or proposal, supported by a notarized statement that the worksheets are true and complete copies of the documents used to prepare the bid or proposal. Make the worksheets available to the ODR at the time of Contract execution. Thereafter grant the Owner during normal business hours access to said notarized copy of worksheets at any time during the period commencing upon execution of the Contract and ending one year after final payment.

10.2. Progress Payments. The Contractor will receive periodic progress payments for Work performed, materials in place, suitably stored on site, or as otherwise agreed to by the Owner and the Contractor. Payment is not due until receipt by the ODR or his designee of a correct and complete Pay Application in electronic and/or hard copy format as set forth in Supplementary General Conditions, Special Conditions or Division 1 Specifications, and certified by the AE. Progress payments are made provisionally and do not constitute acceptance of work not in accordance with the Contract Documents. The Owner will not process progress payment applications for Change Order work until all parties execute the Change Order.

10.2.1 Preliminary Pay Worksheet once each month that a progress payment is to be requested, the Contractor shall submit to the Architect/Engineer and the ODR a complete, clean copy of a preliminary pay worksheet or Preliminary Pay Application, to include the following:

10.2.1.1 The Contractor’s estimate of the amount of Work performed, labor furnished and materials incorporated into the Work, using the established Schedule of Values.
10.2.1.2 An updated Work Progress Schedule including the Executive Summary and all required schedule reports.

10.2.1.3 HUB Subcontracting Plan reports.

10.2.1.4 Such additional documentation as Owner may require as set forth in the Supplementary General Conditions or elsewhere in the Contract Documents.

10.2.2 Contractor's Application for Progress Payment. As soon as practicable, but in no event later than seven days after receipt of the Preliminary Pay Worksheet, the AE and ODR will meet with the Contractor to review the Preliminary Pay Worksheet and to observe the condition of the Work. Based on this review, the ODR and the AE may require modifications to the Preliminary Pay Worksheet prior to the submittal of an application for progress payment, and will promptly notify the Contractor of revisions necessary for approval. As soon as practicable, the Contractor shall submit its Invoice on the appropriate and completed form, reflecting the required modifications to the Schedule of Values required by the AE and/or ODR. Attach all additional documentation required by the ODR and/or AE, as well as an affidavit affirming that all payrolls, bills for labor, materials, equipment, subcontracted work and other indebtedness connected with the Contractor's invoice are paid or will be paid within the time specified in Tex. Gov't Code, Chapter 2251. No invoice is complete unless it fully reflects all required modifications, and attaches all required documentation including the Contractor's affidavit.

10.2.3 Certification by Architect/Engineer. Within five days or earlier following the AE's receipt of the Contractor's formal invoice, the AE will review the application for progress payment for completeness, and forward to the ODR. The AE will certify that the application is complete and payable, or that it is incomplete, stating in particular what is missing. If the Invoice is incomplete, the Contractor shall make the required corrections and resubmit the Invoice for processing.

10.3 Owner's Duty to Pay. The Owner has no duty to pay the Contractor except on receipt by the ODR of: 1) a complete Invoice certified by the AE and 2) the Contractor's updated Work Progress Schedule, and 3) confirmation that the Contractor's as-built documentation at the site is kept current.

10.3.1 Payment for stored materials and/or equipment confirmed by the Owner and AE to be on-site or otherwise properly stored is limited to 85 percent of the invoice price or 85 percent of the scheduled value for the materials or equipment, whichever is less.

10.3.2 Retainage. The Owner will withhold from each progress payment, as retainage, 5 percent of the total earned amount, the amount authorized by law, or as otherwise set forth in the Supplementary General Conditions. Retainage is managed in conformance with Tex. Gov't Code, Chapter 2252, Government Code, subchapter B.
Uniform General Conditions

10.3.2.1 The Contractor shall provide written consent of its Surety for any request for reduction or release of retainage.

10.3.2.2 At least sixty-five (65) percent of the total Contract must be completed before the Owner can consider a retainage reduction or release.

10.3.3 Price Reduction to Cover Loss. The Owner may reduce any Periodic Invoice, or application for Progress Payment, prior to payment to the extent necessary to protect the Owner from loss on account of actions of the Contractor including, but not limited to:

10.3.3.1 Defective or incomplete Work not remedied.

10.3.3.2 Damage to Work of a separate Contractor.

10.3.3.3 Failure to maintain scheduled progress or reasonable evidence that the Work will not be completed within the Contract Time.

10.3.3.4 Persistent failure to carry out the Work in accordance with the Contract Documents.

10.3.3.5 Reasonable evidence that the Work cannot be completed for the unpaid portion of the contract sum.

10.3.3.6 Assessment of fines for violations of Prevailing Wage Rate law; or

10.3.3.7 Failure to include the appropriate amount of retainage for that periodic progress payment.

10.3.4 Title to all material and Work covered by progress payments transfers to the Owner upon payment.

10.3.4.1 Transfer of title to Owner does not relieve the Contractor of the sole responsibility for the care and protection of materials and Work upon which payments have been made until final acceptance of the entire Work, or the restoration of any damaged Work, or waive the right of the Owner to require the fulfillment of all the terms of the Contract.

10.4 Progress payments to the Contractor do not release the Contractor or its surety from any obligations under this Contract.

10.4.1 Upon the Owner's request, the Contractor shall furnish manifest proof of the status of Subcontractor's accounts in a form acceptable to the Owner.

10.4.2 Pay estimate certificates must be signed by a corporate officer or a representative duly authorized by the Contractor.

10.4.3 Provide copies of bills of lading, invoices, delivery receipts or other evidence of the location and value of such materials in requesting payment for materials.
10.4.4 For purposes of Tex. Gov’t Code § 2251.021 (a) (2), the date the performance of service is complete is the date when the Owner’s representative approves the application for payment.

10.5 Off-Site Storage. With prior approval by the Owner and in the event Contractor elects to store materials at an off-site location, abide by the following conditions, unless otherwise agreed to in writing by the Owner.

10.5.1.1 Store materials in a Bonded Commercial Warehouse.

10.5.1.2 Provide separate Insurance Coverage adequate not only to cover materials while in storage, but also in transit from the off-site storage areas to the project site. Copies of duly authenticated Certificates of Insurance, made out to insure the State Agency which is signatory to the contract, must be filed with the Owner’s representative.

10.5.1.3 Inspection by Owner’s representative is allowed at any time. The Owner’s Inspectors must be satisfied with the security, control, maintenance, and preservation measures.

10.5.1.4 Materials for this project are physically separated and marked for the project in a sectioned-off area. Only materials which have been approved through the submittal process are to be considered for payment.

10.5.1.5 Owner reserves the right to reject materials at any time prior to final acceptance of the complete Contract if they do not meet Contract requirements regardless of any previous progress payment made.

10.5.1.6 With each monthly payment estimate, submit a report to the ODR, AE, and Inspector listing the quantities of materials already paid for and still stored in the off-site location.

10.5.1.7 Make warehouse records, receipts and invoices available to Owner’s representatives, upon request, to verify the quantities and their disposition.

10.5.1.8 In the event of Contract termination or default by Contractor, the items in storage off-site, upon which payment has been made, will be promptly turned over to Owner or Owner’s agents at a location near the jobsite as directed by the ODR. The full provisions of PERFORMANCE AND PAYMENT BONDS on this project cover the materials off-site in every respect as though they were stored on the Project Site.
Article 11. Changes

11.1. Change Orders. A Change Order issued after execution of the Contract is a written order to the Contractor, signed by the ODR, the Contractor, and the Architect/Engineer, authorizing a change in the Work or an adjustment in the Contract Sum or the Contract Time. The Contract Sum and the Contract Time can only be changed by Change Order. A Change Order signed by the Contractor indicates his agreement therewith, including the adjustment in the Contract Sum and/or the Contract Time. The ODR may issue written authorization for the Contractor to proceed with work of a change order in advance of final execution by all parties.

11.1.1 The Owner, without invalidating the Contract, may order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions, and the Contract Sum and the Contract Time will be adjusted accordingly. All such changes in the Work shall be authorized by Change Order, and shall be performed under the applicable conditions of the Contract Documents. If such changes cause an increase or decrease in the Contractor's cost of, or time required for, performance of the Contract, an equitable adjustment shall be made and confirmed in writing in a Change Order.

11.1.2 It is recognized by the parties hereto and agreed by them that the specifications and drawings may not be complete or free from errors, omissions and imperfections or that they may require changes or additions in order for the work to be completed to the satisfaction of Owner and that, accordingly, it is the express intention of the parties, notwithstanding any other provisions in this Contract, that any errors, omissions or imperfections in such specifications and drawings, or any changes in or additions to same or to the work ordered by Owner and any resulting delays in the work or increases in Contractor's costs and expenses, shall not constitute or give rise to any claim, demand or cause of action of any nature whatsoever in favor of Contractor, whether for breach of contract, quantum meruit, or otherwise; provided, however, that Owner shall be liable to Contractor for the sum stated to be due Contractor in any Change Order approved and signed by both parties, it being agreed hereby that such sum, together with any extension of time contained in said Change Order, shall constitute full compensation to Contractor for all costs, expenses and damages to Contractor, whether direct, consequential or otherwise in any wise incident to, arising out of, or resulting directly or indirectly from the work performed by Contractor under such Change Order.

11.1.3 Procedures for administration of Change Orders shall be established by the Owner and stated in Supplementary General Conditions, Special Conditions, or elsewhere in the Contract Documents.
11.1.4 Except as provided above, no order, oral statement, or direction of the Owner or his duly appointed representative shall be treated as a change under this article or entitle the Contractor to an adjustment.

11.1.5 The Contractor agrees that the Owner or any of its duly authorized representatives shall have access and the right to examine any directly pertinent books, documents, papers, and records of the Contractor. Further, the Contractor agrees to include in all its subcontracts a provision to the effect that the subcontractor agrees that the Owner or any of its duly authorized representatives shall have access to and the right to examine any directly pertinent books, documents, papers and records of such contractor relating to any claim arising from this Contract, whether or not the subcontractor is a party to the claim. The period of access and examination described herein which relates to appeals under the Disputes article of the Contract, litigation, or the settlement of claims arising out of the performance of this Contract shall continue until final disposition of such claims, appeals or litigation.

11.2. **Unit Prices:** If unit prices are stated in the Contract Documents or subsequently agreed upon, and if the quantities originally contemplated are so changed in a proposed Change Order that application of the agreed unit prices to the quantities of work proposed will cause substantial inequity to the Owner or the Contractor, the applicable unit prices shall be equitably adjusted as provided in the Special Conditions or as agreed to by the parties and incorporated into Change Order.

11.3. **Claims for Additional Costs**

11.3.1 If the Contractor wishes to make a claim for an increase in the Contract Sum not related to a requested change, they shall give the Owner and the Architect/Engineer written notice thereof within twenty-one (21) days after the occurrence of the event giving rise to such claim, but, in any case before proceeding to execute the work considered to be additional cost or time, except in an emergency endangering life or property in which case the Contractor shall act in accordance with Article 7.2.1. No such claim shall be valid unless so made. If the Owner and the Contractor cannot agree on the amount of the adjustment in the Contract Sum, it shall be determined as set forth under Article 15. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

11.3.2 If the Contractor claims that additional cost is involved because of, but not limited to, 1) any written interpretation of the Contract Documents, 2) any order by the Owner to stop the Work pursuant to Article 14 where the Contractor was not at fault, 3) any written order for a minor change in the Work issued pursuant to Article 11.4, the Contractor shall make such claim as provided in Article 11.3.1.
11.3.3 Should the Contractor or his Subcontractors fail to call attention of the AE to obvious discrepancies or omissions in the Bid/Proposal Documents during the pre-bid/pre-proposal period, but claim additional costs for corrective work after contract award, the Owner may assume intent to circumvent competitive bidding for necessary corrective work. In such case, the Owner may choose to let a separate contract for the corrective work, or issue a Unilateral Change Order to require performance by the Contractor. Claims for time extensions or for extra cost resulting from delayed notice of contract document discrepancies or omissions will not be considered by the Owner.

11.4. Minor Changes. The AE, with concurrence of the ODR, will have authority to order minor changes in the Work not involving an adjustment in the Contract Sum or an extension of the Contract Time. Such changes shall be effected by written order which the Contractor shall carry out promptly and record on as-built record documents.

11.5. Concealed Site Conditions. If, in the performance of the Contract, subsurface, latent or concealed conditions at the site are found to be materially different from the information included in the bid/proposal documents, or if unknown conditions of an unusual nature are disclosed differing materially from the conditions usually inherent in work of the character shown and specified, the ODR and the Architect/Engineer shall be notified in writing of such conditions before they are disturbed. Upon such notice, or upon its own observation of such conditions, the Architect/Engineer, with the approval of the ODR, will promptly make such changes in the Drawings and Specifications as they deem necessary to conform to the different conditions, and any increase or decrease in the cost of the Work, or in the time within which the Work is to be completed, resulting from such changes will be adjusted by Change Order, subject to the prior approval of the ODR.

11.6. Extension of Time. All Changes to the Contract Time shall be made as a consequence of requests as required under Article 9.6, and as documented by Change Order as provided under Article 11.1.

11.7. Administration of Change Order Requests

All changes in the Contract shall be administered in accordance with procedures approved by the Owner, and when required make use of such electronic information management system(s) as the owner may employ.

11.7.1 Routine changes in the Construction Contract shall be formally initiated by the Architect/Engineer by means of a Change Request form detailing requirements of the proposed change for pricing by the Contractor. This action may be preceded by communications between the Contractor, AE and ODR concerning the need and nature of the change, but such communications shall not constitute a basis for beginning the proposed Work by the Contractor. Except for emergency conditions described below, approval of the Contractor's
cost proposal by the Architect/Engineer and ODR will be required for authorization to proceed with the Work being changed. The Owner will not be responsible for the cost of work changed without prior approval and the Contractor may be required to remove work so installed.

11.7.2 All proposed costs for change order work must be supported by itemized accounting of material, equipment and associated itemized installation costs in sufficient detail, following the outline and organization of the established Schedule of Values, to permit analysis by the AE and ODR using current estimating guides and/or practices. Photocopies of Subcontractor and vendor proposals shall be furnished unless specifically waived by the ODR. Contractor shall provide written response to change request within twenty-one (21) calendar days of receipt.

11.7.3 Any unexpected circumstance which necessitates an immediate change in order to avoid a delay in progress of the Work may be expedited by verbal communication and authorization between the Contractor and Owner, with written confirmation following within twenty-four (24) hours. A limited scope not-to-exceed estimate of cost and time will be requested prior to authorizing Work to proceed. Should the estimate be impractical for any reason, the ODR may authorize the use of detailed cost records of such work to establish and confirm the actual costs and time for documentation in a formal Change Order.

11.7.4 Emergency changes to save life or property may be initiated by the Contractor alone (see Article 7.3) with the claimed cost and/or time of such work to be fully documented as to necessity and detail of the reported costs and/or time.

11.8. Pricing Change Order Work

The amounts that the Contractor and/or its Subcontractors add to a Change Order for profit and overhead will also be considered by the Owner before approval is given. The amounts established hereinafter are the maximums that are acceptable to the Owner.

11.8.1 For work performed by its forces, the Contractor will be allowed their actual costs for materials, the total amount of wages paid for labor, the total cost of Federal Old Age Benefit (Social Security Tax) and of Worker's Compensation and Comprehensive General Liability Insurance, plus Bond cost if the change results in an increase in the Bond premium paid by the Contractor. To the total of the above costs, the Contractor will be allowed to add a percentage as noted below to cover overhead and profit combined. Overhead shall be considered to include insurance other than mentioned above, field and office supervisors and assistants, including safety and scheduling personnel, use of small tools, incidental job burdens and general Home Office expenses, and no separate allowance will be made therefore.
Allowable percentages for overhead and profit on changes will not exceed 15 percent if the total of self-performed work is less than or equal to $10,000, 10 percent if the total of self-performed work is between $10,000 and $20,000 and 7.5 percent if the total of self-performed work is over $20,000, for any specific change priced.

11.8.2 For subcontracted Work each affected Subcontractor shall figure its costs, overhead and profit as described above for Contractor's work, all subcontractor costs shall be combined, and to that total subcontractor cost the Contractor will be allowed to add a maximum mark-up of 10 percent if the total of all subcontracted work is less than or equal to $10,000, 7.5 percent if the total of all subcontracted work is between $10,000 and $20,000 and 5 percent if the total of all subcontractor work is over $20,000.

11.8.3 On changes involving both additions and deletions, percentages for overhead and profit will be allowed only on the net addition.

The Owner does not accept and will not pay for additional contract cost identified as indirect, consequential, or as damages caused by delay.
Article 12. Project Completion and Acceptance

12.1. Closing Inspections

12.1.1 Substantial Completion Inspection. When the Contractor considers the entire Work or part thereof Substantially Complete, it shall notify the ODR in writing that the Work will be ready for Substantial Completion Inspection on a specific date. The Contractor shall include with this notice the Contractor's Punchlist to indicate that it has previously inspected all the Work associated with the request for inspection, has corrected items where possible, and includes all items scheduled for completion or correction prior to final inspection. The failure to include any items on this list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. If any of the items on this list prevents the building from the use to which it is intended, the Contractor shall not request a Substantial Completion Inspection. The Owner and its representatives will review the list of items and schedule the requested inspection, or inform the Contractor in writing that such an inspection is premature because the Work is not sufficiently advanced or conditions are not as represented on the Contractor's list.

12.1.1.1. Prior to the Substantial Completion Inspection, the Contractor shall furnish a copy of its marked-up As-Built Drawings and a preliminary copy of each instructional manual, maintenance and operating manual, parts catalog, wiring diagrams, spare parts, specified written warranties and like publications or parts for all installed equipment, systems and like items. Delivery of these items is a prerequisite for requesting the Substantial Completion Inspection.

12.1.1.2. On the date requested by Contractor, or as mutually agreed upon pending the status of the open items list, the AE, ODR, the Contractor and other Owner representatives as determined by the Owner, will jointly attend the Substantial Completion Inspection, which shall be conducted by the ODR or their delegate. If the ODR determines that the Work is Substantially Complete, the ODR will issue a Certificate of Substantial Completion to be signed by the AE, Owner and Contractor, establishing the date of Substantial Completion. AE will provide with this certificate a list of punchlist items (the Pre-Final Punchlist) for completion prior to final inspection. This list may include items in addition to those on the Contractor's punchlist, which the inspection team deems necessary to correct or complete prior to Final Inspection. If the Owner occupies the facility upon determination of Substantial Completion, the Contractor shall complete all corrective Work at the
convenience of the Owner, without disruption to Owner’s use of the facility for its intended purposes.

12.1.2 Final Inspection. The Contractor shall complete the list of items identified on the Pre-Final Punchlist prior to requesting a Final Inspection. Unless otherwise specified, or otherwise agreed in writing by the parties as documented on the Certificate of Substantial Completion, the Contractor shall complete and/or correct all Work within thirty (30) days of the Substantial Completion date. Upon completion of the Pre-Final Punchlist work, the Contractor shall give written notice to the ODR and AE that the Work will be ready for Final Inspection on a specific date. The Contractor shall accompany this notice with a copy of the updated Pre-Final Punchlist indicating resolution of all items. On the date specified or as soon thereafter as is practicable, the ODR, AE and the Contractor will inspect the Work. The AE will submit to the Contractor a Final Punchlist of open items that the inspection team requires corrected or completed before final acceptance of the Work.

12.1.2.1 Correct or complete all items on the Final Punchlist before requesting Final Payment. Unless otherwise agreed to in writing by the parties, complete this work within seven (7) days of receiving the Final Punchlist. Upon completion of the Final Punchlist, notify the AE and ODR in writing stating the disposition of each Final Punchlist item. The AE, Owner and Contractor shall promptly inspect the completed items. When the Final Punchlist is complete, and the Contract is fully satisfied according to the Contract Documents the ODR will issue a certificate establishing the date of Final Completion. Completion of all Work is a condition precedent to the Contractor’s right to receive Final Payment.

12.1.3 Annotation. Any Certificate issued under this Article may be annotated to indicate that it is not applicable to specified portions of the Work, or that it is subject to any limitation as determined by the Owner.

12.1.4 Purpose of Inspection. Inspection is for determining the completion of the Work, and does not relieve the Contractor of its overall responsibility for completing the Work in a good and competent fashion, in compliance with the Contract. Work accepted with incomplete punchlist items or failure of the Owner or other parties to identify Work that does not comply with the Contract Documents or is defective in operation or workmanship does not constitute a waiver of the Owner’s rights under the Contract or relieve the Contractor of its responsibility for performance or warranties.

12.1.5 Additional Inspections

12.1.5.1 If the Owner’s inspection team determines that the Work is not Substantially Complete at the Substantial Completion
Uniform General Conditions

Inspection, the ODR or AE will give the Contractor written notice listing cause(s) of the rejection. The ODR will set a time for completion of incomplete or defective work. Complete or correct all work so designated prior to requesting a second Substantial Completion Inspection.

12.1.5.2 If the Owner's inspection team determines that the Work is not complete at the Final Inspection, the ODR or the AE will give the Contractor written notice listing the cause(s) of the rejection. The ODR will set a time for completion of incomplete or defective work. The Contractor shall complete or correct all Work so designated prior to again requesting a Final Inspection.

12.1.5.3 The Contract Agreement contemplates three (3) comprehensive inspections: the Substantial Completion Inspection, the Final Completion Inspection, and the Inspection of Completed Final Punchlist Items. The cost to the Owner of additional inspections resulting from the Work not being ready for one or more of these inspections is the responsibility of the Contractor. The Owner may issue a Unilateral Change Order deducting these costs from Final Payment. Upon the Contractor's written request, the Owner will furnish documentation of any costs so deducted. Work added to the Contract by Change Order after Substantial Completion Inspection is not corrective work for purposes of determining timely completion, or assessing the cost of additional inspections.

12.1.6 Phased Completion. The contract may provide, or project conditions may warrant, as determined by the ODR, that designated elements or parts of the Work be completed in phases. Where phased completion is required or specifically agreed to by the parties, the provisions of the contract related to Closing Inspections, Occupancy and Acceptance apply independently to each designated element or part of the Work. For all other purposes, unless otherwise agreed by the parties in writing, Substantial Completion of the Work as a whole is the date on which the last element or part of the Work completed receives a Substantially Completion certificate. Final Completion of the Work as a whole is the date on which the last element or part of the Work completed receives a Final Completion certificate.

12.2 Owner's Right of Occupancy. The Owner may occupy or use all or any portion of the Work following Substantial Completion, or at any earlier stage of completion. Should the Owner wish to use or occupy the Work, or part thereof, prior to Substantial Completion, the ODR will notify the Contractor in writing. Work performed on the premises by third parties on the Owner's behalf does not constitute occupation or use of the Work by the Owner for purposes of this Article. All Work performed by the Contractor after
occupancy, whether in part or in whole, shall be at the convenience of the Owner so as to not disrupt Owner's use of, or access to occupied areas of the project.

12.3 **Acceptance & Payment**

12.3.1 **Request for Final Payment.** Following the certified completion of all work, including all punch list items, cleanup, and the delivery of record documents, the Contractor shall submit a certified Application for Final Payment. Include all sums held as retainage and forward to the AE and the ODR for review and approval.

12.3.2 **Final Payment Documentation.** Submit, prior to or with the Application for Final Payment, final copies of all close out documents, maintenance and operating instructions, guarantees and warranties, certificates, record documents and all other items required by the Contract. Submit Consent of Surety to Final Payment and an affidavit that all payrolls, bills for materials and equipment, subcontracted work and other indebtedness connected with the Work, except as specifically noted, are paid, will be paid, or otherwise satisfied within the period of time required by Tex. Gov't Code, Chapter 2251. Furnish documentation establishing payment or satisfaction of all such obligations, such as receipts, releases and waivers of claims and liens arising out of the Contract. The Contractor may not subsequently submit a claim on behalf of a subcontractor or vendor unless the Contractor's affidavit notes that claim as an exception.

12.3.3 **Architect/Engineer Approval.** The AE will review a submitted Application for Final Payment promptly but in no event later than ten (10) days after its receipt. Prior to the expiration of this deadline, the AE will either 1) return the Application for Final Payment to Contractor with corrections for action and resubmission or 2) accept it, note their approval and send to Owner.

12.3.4 **Offsets and Deductions.** The Owner may deduct from the Final Payment all sums due from the Contractor. If the Certificate of Final Completion notes any Work remaining, incomplete, or defects not remedied, the Owner may deduct the cost of remediing such deficiencies from the Final Payment. On such deductions, the Owner will identify each deduction, the amount, and the explanation of the deduction on or by the 21st day after Owner's receipt of an approved Application for Final Payment. Such offsets and deductions shall be incorporated via a final Change Order, including Unilateral Change Order as may be applicable.

12.3.5 **Final Payment Due.** Final Payment is due and payable by the Owner, subject to all allowable offsets and deductions, on the 31st day following the Owner's approval of the Application for Payment. If the Contractor disputes any amount deducted by the Owner, the Contractor shall give notice of the dispute on or before the thirtieth
(30th) day following receipt of Final Payment. Failure to do so will bar any subsequent claim for payment of amounts deducted.

12.3.6 **Effect of Final Payment.** Final Payment constitutes a waiver of all claims by the Owner, relating to the condition of the Work except those arising from:

12.3.6.1 Faulty or defective Work appearing after Substantial Completion (latent defects); and/or

12.3.6.2 Failure of the Work to comply with the requirements of the Contract Documents; and/or

12.3.6.3 Terms of any warranties required by the Contract, or implied by law; and/or

12.3.6.4 Claims arising from personal injury or property damage to third parties.

12.3.7 **Waiver of Claims.** Final payment constitutes a waiver of all claims and liens by the Contractor except those specifically identified in writing and submitted to the ODR prior to the application for Final Payment.

12.3.8 **Effect on Warranty.** Regardless of approval and issuance of Final Payment, the Contract is not deemed fully performed by the Contractor and closed until the expiration of all warranty periods.
Article 13. Warranty & Guarantee

13.1. **Contractor's General Warranty and Guarantee.** Contractor warrants to the Owner that all Work is executed in accordance with the Contract, complete in all parts and in accordance with approved practices and customs, and of the best finish and workmanship. The Contractor further warrants that unless otherwise specified, all materials and equipment incorporated in the Work under the Contract are new. The Owner may, at its option, agree in writing to waive any failure of the Work to conform to the Contract, and to accept a reduction in the Contract Price for the cost of repair or diminution in value of the Work by reason of such defect. Absent such a written agreement, the Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute and is not waived by any inspection or observation by the Owner, Architect/Engineer or others, by making any progress payment or final payment, by the use or occupancy of the Work or any portion thereof by the Owner, at any time, or by any repair or correction of such defect made by the Owner.

13.2. **Warranty Period.** Except as may be otherwise specified or agreed, the Contractor shall repair all defects in materials, equipment, or workmanship appearing within one year from the date of Substantial Completion of the Work. If Substantial Completion occurs by phase, then the warranty period for that particular Work begins on the date of such occurrence, or as otherwise stipulated on the Certificate of Substantial Completion for the particular Work.

13.3 **Limits on Warranty.** Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

13.3.1 Modification or improper maintenance or operation by persons other than Contractor, Subcontractors, or any other individual or entity for whom Contractor is not responsible, unless Owner is compelled to undertake maintenance or operation due to the neglect of the Contractor.

13.3.2 Normal wear and tear under normal usage after acceptance of the Work by the Owner.

13.4 **Events Not Affecting Warranty.** Contractor's obligation to perform and complete the Work in a good and workmanlike manner in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

13.4.1.1 Observations by Owner and/or AE.

13.4.1.2 Recommendation to pay any progress or final payment by AE.
13.4.1.3 The issuance of a certificate of Substantial Completion or any payment by Owner to Contractor under the Contract Documents.

13.4.1.4 Use or occupancy of the Work or any part thereof by Owner.

13.4.1.5 Any acceptance by Owner or any failure to do so.

13.4.1.6 Any review of a Shop Drawing or sample submittal; or

13.4.1.7 Any inspection, test or approval by others.

13.5 Separate Warranties. If a particular piece of equipment or component of the Work for which the contract requires a separate warranty is placed in continuous service before Substantial Completion, the Warranty Period for that equipment or component will not begin until Substantial Completion, regardless of any warranty agreements in place between suppliers and/or Subcontractors and the Contractor. The ODR will certify the date of service commencement in the Substantial Completion Certificate.

13.5.1 In addition to the Contractor's warranty and duty to repair, the Contractor expressly assumes all warranty obligations required under the Contract for specific building components, systems and equipment.

13.5.2 The Contractor may satisfy any such obligation by obtaining and assigning to the Owner a complying warranty from a manufacturer, supplier, or Subcontractor. Where an assigned warranty is tendered and accepted by the Owner which does not fully comply with the requirements of the Contract, the Contractor remains liable to the Owner on all elements of the required warranty not provided by the assigned warranty.

13.6 Correction of Defects. Upon receipt of written notice from the Owner, or any agent of the Owner designated as responsible for management of the Warranty Period, of the discovery of a defect, the Contractor shall promptly remedy the defect(s), and provide written notice to the Owner and designated agent indicating action taken. In case of emergency where delay would cause serious risk of loss or damage to the Owner, or if the Contractor fails to remedy within 30 days, or within another period agreed to in writing, the Owner may correct the defect and be reimbursed the cost of remedying the defect from the Contractor or its Surety.

13.7 Certification of No Asbestos Containing Materials or Work. The Contractor shall ensure compliance with the Asbestos Hazard Emergency Response Act (ASHERA- 40 CFR 763-99 (7)) from all subcontractors and materials suppliers, and shall provide a notarized certification to the Owner that all equipment and materials used in fulfillment of their contract responsibilities are non Asbestos Containing building Materials (ACBM). This certification must be provided no later than the Contractor's application for Final Payment.
Article 14. Suspension and Termination

14.1. **Suspension of Work for Cause.** The Owner may, at any time without prior notice, suspend all or any part of the Work, if after reasonable observation and/or investigation, the Owner determines it is necessary to do so to prevent or correct any condition of the Work, which constitutes an immediate safety hazard, or which may reasonably be expected to impair the integrity, usefulness or longevity of the Work when completed.

14.1.1.1. The Owner will give the Contractor a written notice of suspension for cause, setting forth the reason for the suspension and identifying the Work suspended. Upon receipt of such notice, the Contractor shall immediately stop the Work so identified. As soon as practicable following the issuance of such a notice, the Owner will initiate and complete a further investigation of the circumstances giving rise to the suspension, and issue a written determination of the findings.

14.1.1.2. If it is confirmed that the cause was within the control of the Contractor, the Contractor will not be entitled to an extension of time or any compensation for delay resulting from the suspension. If the cause is determined not to have been within the control of the Contractor, and the suspension has prevented the Contractor from completing the Work within the Contract Time, the suspension is an Excusable Delay and a Time Extension will be granted through a Change Order.

14.1.1.3. Suspension of work under this provision will be no longer than is reasonably necessary to remedy the conditions giving rise to the suspension.

14.2. **Suspension of Work for Owner’s Convenience.** Upon seven (7) calendar days written notice to the Contractor, the Owner may at any time without breach of the Contract suspend all or any portion of the Work for a period of up to thirty days for its own convenience. The Owner will give the Contractor a written notice of suspension for convenience, which sets forth the number of suspension days for which the Work, or any portion of it, and the date on which the suspension of Work will cease. When such a suspension prevents the Contractor from completing the Work within the Contract Time, it is an Excusable Delay. A notice of suspension for convenience may be modified by the Owner at any time on seven (7) calendar days written notice to the Contractor. If the Owner suspends the Work for its convenience for more than 60 consecutive calendar days, the Contractor may elect to terminate the contract pursuant to the provisions of the contract.

14.3. **Termination by Owner for Cause**

14.3.1 The Owner may, without prejudice to any right or remedy, terminate the employment of the Contractor and take possession of the site and of all materials, equipment, tools, construction equipment and
machinery thereon owned by the Contractor, under any of the following circumstances:

14.3.1.1 Persistent or repeated failure or refusal, except during complete or partial suspensions of work authorized under the Contract, to supply enough properly skilled workmen or proper materials; and/or

14.3.1.2 Persistent disregard of laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, including the ODR; and/or

14.3.1.3 Persistent failure to prosecute the work in accordance with the Contract, and to insure its completion within the time, or any approved extension thereof, specified in this Contract; and/or

14.3.1.4 Failure to remedy defective work condemned by the ODR; and/or

14.3.1.5 Failure to pay subcontractors, laborers, and material suppliers pursuant to Tex. Gov’t Code Chapter 2251; and/or

14.3.1.6 Persistent endangerment to the safety of labor or of the Work; and/or

14.3.1.7 Failure to supply or maintain statutory bonds or to maintain required insurance, pursuant to the contract; and/or

14.3.1.8 Any material breach of the Contract; and/or

14.3.1.9 The Contractor’s insolvency, bankruptcy, or demonstrated financial inability to perform the work.

14.4 Failure by the Owner to exercise the right to terminate in any instance is not a waiver of the right to do so in any other instance.

14.4.1 Should the Owner decide to terminate the employment of the Contractor under the provisions of Article 14.1.1, it will provide to the Contractor and its Surety thirty (30) days prior written notice.

14.4.2 Should the Contractor or its Surety, after having received notice of termination, demonstrate to the satisfaction of the Owner, remedy to the condition(s) upon which the notice of termination was based, the notice of termination shall be rescinded in writing by the Owner. If so rescinded, the Work may continue without an extension of time.

14.4.3 If the Contractor or its Surety fails to demonstrate remedy to the satisfaction of the Owner within thirty days following receipt of notice, the Owner may arrange for completion of the Work and deduct the cost of completion from the unpaid Contract Sum.

14.4.3.1 This amount includes the cost of additional Owner costs such as AE services, other consultants, and contract administration.

14.4.3.2 The Owner will make no further payment to the Contractor or its Surety until all costs of completing the Work are paid. If the
unpaid balance of the Contract Sum exceeds the costs of administering and finishing the Work, the Contractor will receive the excess funds. If such costs exceed the unpaid balance, the Contractor or its Surety will pay the difference to the Owner.

14.4.3.3 This obligation for payment survives the termination of the Contract.

14.4.3.4 The owner reserves the right in termination for cause to take assignment of all contracts between the Contractor and its Subcontractors, vendors and suppliers. The ODR will promptly notify the Contractor of the contracts the Owner elects to assume. Upon receipt of such notice, the Contractor shall promptly take all steps necessary to effect such assignment.

14.5  **Termination for Convenience of Owner.** The Owner reserves the right, without breach, to terminate the Contract prior to, or during the performance of the Work, for any reason. Upon such an occurrence, the following shall apply:

14.5.1 The Owner will immediately notify the Contractor and the AE in writing, specifying the reason for and the effective date of contract termination. Such notice may also contain instructions necessary for the protection, storage or decommissioning of incomplete work or systems, and for safety.

14.5.2 Upon receipt of the notice of termination, the Contractor shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due at that point in the Contract:

14.5.4.1 Stop all work.

14.5.4.2 Place no further subcontracts or orders for materials or services.

14.5.4.3 Terminate all subcontracts.

14.5.4.4 Cancel all materials and equipment orders as applicable.

14.5.4.5 Take action that is necessary to protect and preserve all property related to this Contract which is in the possession of the Contractor.

14.5.3 When the Contract is terminated for the Owner's convenience, the Contractor may recover from the Owner payment for all Work executed, including any additional work required pursuant to the notice of termination, and for any provable loss and reasonable expenses attributable to the Work resulting from such termination.

14.6  **Termination By Contractor.** If the Work is stopped for a period of ninety (90) days under an order of any court or other public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the Contractor or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the
Contractor, then the Contractor may, upon thirty (30) additional days’ written notice to the ODR, terminate the Contract and recover from the Owner payment for all Work executed and for any provable loss and reasonable expenses attributable to the Work resulting from such termination. If the cause of the work stoppage is removed prior to the end of the thirty (30) day notice period, the Contractor may not terminate the Contract.

14.7 **Settlement on Termination.** When the Contract is terminated for any reason, at any time prior to 180 days after the effective date of termination, the Contractor shall submit a final termination settlement proposal to the Owner based upon recoverable costs as provided under the contract. If the Contractor fails to submit the proposal within the time allowed, the Owner may determine the amount due to the Contractor because of the termination and pay the determined amount to the Contractor.
Article 15. Dispute Resolution

15.1 Unresolved Contractor Disputes. The dispute resolution process provided for in Tex. Gov’t Code, Chapter 2260, shall be used by the Owner and the Contractor to attempt to resolve any claim for breach of contract made by the Contractor, that is not resolved under procedures described throughout the Uniform General Conditions, Supplemental Conditions, or Special Conditions of the Contract.

15.2 Alternative Dispute Resolution Process. The Owner may establish a dispute resolution process to be utilized in advance of that outlined in Tex. Gov’t Code, Chapter 2260.
Article 16. Miscellaneous

16.1. Supplemental and Special Conditions. When the Work contemplated by the Owner is of such a character that the foregoing Uniform General Conditions of the Contract cannot adequately cover necessary and additional contractual relationships, the Contract may include Supplemental and Special Conditions as described below:

16.1.1 Supplemental Conditions may describe the standard procedures and requirements of contract administration followed by a contracting agency of the State. Supplemental Conditions may expand upon matters covered by the Uniform General Conditions, where necessary, provided the expansion does not weaken the character or intent of the Uniform General Conditions. Supplemental Conditions are of such a character that it is to be anticipated that a contracting agency of the State will normally use the same, or similar, conditions to supplement each of its several projects.

16.1.2 Special Conditions shall relate to a particular project and be peculiar to that project but shall not weaken the character or intent of the Uniform General Conditions.

16.2. Federally Funded Projects. On Federally funded projects, the Owner may waive, suspend or modify any Article in these Uniform General Conditions which conflicts with any Federal statute, rule, regulation or procedure, where such waiver, suspension or modification is essential to receipt by the Owner of such Federal funds for the project. In the case of any project wholly financed by Federal funds, any standards required by the enabling Federal statute, or any Federal rules, regulations or procedures adopted pursuant thereto, shall be controlling.

16.3. Internet-based Project Management Systems. At its option, the Owner may administer its design and construction management through an Internet-based management system. In such cases, the Contractor shall conduct communication through this media and perform all project related functions utilizing this database system. This includes correspondence, submittals, requests for information, vouchers or payment requests and processing, amendment, change orders and other administrative activities.

16.3.1 Accessibility And Administration.

16.3.1.1 When used, the Owner will make the software accessible via the Internet to all project team members.

16.3.1.2 The Owner shall administer the software.

16.3.2 Training. When used, the Owner shall provide training to the project team members.

End of Uniform General Conditions – revised 5/4/06
This Subcontract Agreement (herein called “Agreement”) is made and entered into as of this ________ day of __________, 20____, by and between BUFORD - THOMPSON COMPANY, LLC, (herein called “Contractor”) and [Subcontractor’s Name] (herein called “Subcontractor”) to perform part of the Work on the following Project:

PROJECT:
Mass Communication Project

OWNER:
Midwestern State University
3410 Taft Blvd.
Wichita Falls, Texas 76308

I. SCOPE OF WORK

1.01 Subcontract Work. Subcontractor shall furnish and pay for all labor, materials, fuel, equipment, tools, machinery, and supplies; perform all work; obtain and pay for all necessary permits, licenses and fees; pay all state sales taxes, state and federal unemployment taxes, and all other taxes and fees associated with the subcontract labor or materials; provide all required construction layout and surveying; and do all things necessary to complete the following work, together with all appurtenant and related work, in strict compliance with the Contract Documents described in the following paragraph 1.02, for the following work:

“TBD – Based on individual Proposal Packages”

Subcontractor shall not attach any proposal/bid or special addendum to this Subcontract Agreement. The only acceptable attachment will be the Proposal Form prepared by Contractor and included as part of the Proposal Package Manual. Any and all special conditions and exclusions shall be written on the Proposal Form and NOT included as an attachment to the Proposal Form or to this Subcontract Agreement.

Such work shall be herein called the “Subcontract Work.”

1.02 Contract Documents.

a. The Contract Documents shall include, in addition to this Agreement, all documents reflecting the agreement between the Owner and Contractor for the construction of the Project, including, but not limited to, the plans, specifications, general conditions, special conditions, addenda, performance bond, and payment bond (the “Prime Agreement”). The Prime Agreement will be on file at the office of Contractor, and available for Subcontractor’s review during normal business hours.

b. Subcontractor agrees that prior to acceptance of this Agreement, as evidenced by the signatures of both Contractor and Subcontractor hereon or by Subcontractor’s commencement of the Subcontract Work, Subcontractor will read the Contract Documents and be familiar with each and every part thereof affecting the Subcontract Work together with all related drawings, plans, specifications, and all general conditions and special conditions incidental thereto. Subcontractor by examination has satisfied himself as to the nature and location of the Subcontract Work. Subcontractor further agrees that (i) this Agreement contains the entire agreement of the parties; (ii) no representations or warranties of any kind have been made by Contractor or its employees, nor relied upon by Subcontractor, other than those expressed in this Agreement; and (iii) the terms and conditions of this Agreement are not in any way amended or modified by any prior negotiations, offers, bids, proposals, exclusions, and/or agreements, whether written or oral, respecting the subject matter of the Subcontract Work or this Agreement, and any such prior negotiations, offers, bids, proposals, exclusions, and/or agreements are no longer of any force or effect. All modifications to this Agreement shall be in writing signed by the parties.

c. Subcontractor agrees that prior to acceptance of this Agreement, as evidenced by the signatures of both Contractor and Subcontractor hereon or by Subcontractor’s commencement of the Subcontract Work, Subcontractor will be satisfied by examination as to the nature and location of the work specified herein; the character, quantity, and kinds of materials necessary; the adequacy of any surface or subsurface conditions necessary to assure proper performance of the Subcontract Work; the kinds and quantity of equipment needed; and other local conditions or matters affecting compliance with the Contract Documents. Subcontractor accepts these existing conditions for the performance of the Subcontract Work at the Subcontract Price.
d. Subcontractor agrees that prior to acceptance of this Agreement, as evidenced by the signatures of both Contractor and Subcontractor hereon or by Subcontractor’s commencement of the Subcontract Work, Subcontractor will review the Owner’s Financial Information provided by Contractor and will accept the risks associated with the Owner’s failure to make payment. Further, Subcontractor’s acceptance of this Agreement, or initiation of the Subcontract Work, shall constitute Subcontractor’s representation to Contractor and confirmation that prior to such acceptance of this Agreement or initiation of the Subcontract Work: (i) Subcontractor received from Contractor and reviewed the Owner’s Financial Information; (ii) such information was adequate for Subcontractor to evaluate and understand the risks of the Owner’s non-payment; and (iii) Subcontractor accepted the risk of the Owner’s payment as a condition precedent to Contractor’s obligation to pay Subcontractor.

e. Subcontractor represents to Contractor that Subcontractor is knowledgeable and familiar with all statutes, codes, ordinances, rules and regulations applicable to the Subcontract Work. Subcontractor further agrees that Subcontractor will not proceed with any portion of the Subcontract Work that is in violation or variance with any such statute, code, ordinance, rule or regulation, and will promptly notify Contractor in writing of any such violation or variance before commencing with the Subcontract Work.

f. Any questions arising with respect to interpretation of the Contract Documents, or any related drawings, plans, or specifications, or any other communication related to the performance of the Subcontract Work, shall be submitted through Contractor for submission to the Owner or the Owner’s representative. Subcontractor shall follow the directions of the Owner or the Owner’s representative, as conveyed by Contractor, with respect to any such matters. Subcontractor agrees that the Owner’s (or Owner’s representative’s) interpretation of the requirements of the Contract Documents shall be final, as long as such interpretation and/or decision is not in conflict with the terms of the Contract Documents.

g. Subcontractor agrees to become familiar with the respective rights, powers, benefits and liabilities of Contractor and the Owner under the Prime Agreement and hereby agrees to comply with and perform all provisions thereof which are applicable to the Subcontract Work. Subcontractor agrees to be bound to Contractor under this Agreement according to the same terms and conditions as Contractor is bound to the Owner under the Prime Agreement. Subcontractor shall assume and perform all of the obligations and responsibilities of Contractor under the Prime Agreement which pertain or relate to the Subcontract Work as described in Paragraph 1.01.

h. CONTRACTOR AND SUBCONTRACTOR AGREE TO USE ELECTRONIC MEANS TO TRANSMIT INFORMATION RELATED TO THIS AGREEMENT. SUBCONTRACTOR AGREES THAT ANY DOCUMENT DELIVERED TO SUBCONTRACTOR BY USE OF ELECTRONIC MEANS, INCLUDING BUT NOT LIMITED TO (i) EMAIL; (ii) A .PDF, .TIF, .JPG, .XLS, .DOCX, OR OTHER EMAIL ATTACHMENT, OR (iii) OTHER ELECTRONIC FORMAT WILL BE BINDING AS IF AN ORIGINAL DOCUMENT HAS BEEN DELIVERED TO THE SUBCONTRACTOR. FOR ANY DOCUMENTS REQUIRING A SIGNATURE (INCLUDING, WITHOUT LIMITATION, THIS AGREEMENT ISSUED HEREUNDER), SUBCONTRACTOR SHALL PRINT THE DOCUMENT, SIGN THE DOCUMENT, HAVE THE DOCUMENT NOTARIZED, IF REQUIRED, SCAN THE EXECUTED DOCUMENT IN PDF FORMAT, AND RETURN THE FULLY EXECUTED DOCUMENT TO CONTRACTOR VIA E-MAIL.

II.
PERFORMANCE
AND PROSECUTION OF WORK

2.01. Independent Contractor. Subcontractor agrees that it is an independent contractor under this Agreement. Subcontractor is exclusively and solely responsible for, and has control over, all construction means, methods, techniques, procedures, and/or supervision of the Subcontract Work including any means, methods, techniques, procedures, and/or supervision related to the safety of Subcontractor’s employees and any other persons working in the area of the Subcontract Work.

2.02. Storage of Materials. Subcontractor shall examine all equipment and materials furnished in connection with the Subcontract Work for compliance with the applicable Contract Documents. Subcontractor shall then unload and properly store all such equipment and materials to prevent damage or loss. Contractor may deduct all costs for such damage or loss resulting from improperly stored materials from payments due to Subcontractor. If such costs exceed the unpaid Subcontract Price, Subcontractor shall pay Contractor the balance of such excess upon demand.

2.03 Surface and Subsurface Conditions. Subcontractor shall inspect surface and/or subsurface conditions affecting the Subcontract Work to assure that the Subcontract Work will be properly performed in accordance with the applicable Contract Documents. If any remedial work is required to the surface or subsurface, Subcontractor shall immediately notify Contractor in writing. IF SUBCONTRACTOR PERFORMS SUBCONTRACT WORK WITHOUT PROVIDING NOTICE THAT SUCH REMEDIAL WORK IS REQUIRED, SUBCONTRACTOR ACCEPTS ALL SURFACE AND SUBSURFACE CONDITIONS AND WAIVES ANY CLAIMS FOR EXTRA COMPENSATION TO REPAIR OR REMEDY SUCH CONDITIONS OR FOR REPLACEMENT OF THE SUBCONTRACT WORK ARISING OR RESULTING FROM DEFECTS IN THE SURFACE OR SUBSURFACE.

2.04 Protection of Work. Subcontractor shall take necessary precautions to properly protect the Subcontract Work and the work of Contractor and other subcontractors.
Subcontractor shall promptly repair any damage caused to the work of Contractor or other subcontractors by Subcontractor or its sub-subcontractors or materialmen at any tier. If Subcontractor fails to promptly repair such damage, then Contractor may deduct the costs of such repairs from payments due Subcontractor. If such costs exceed the unpaid Subcontract Price, Subcontractor shall pay Contractor the balance of such excess upon demand.

2.05 Inspection of Work. Subcontractor shall provide sufficient, safe, and proper facilities at all times for the inspection of the Subcontract Work by the Owner, Contractor, or their authorized representatives. Subcontract Work not meeting the specifications or intent of the applicable Contract Documents, including, but not limited to, the drawings, plans and specifications, shall be removed, rebuilt, and restated to conform to the requirements of the Contract Documents, all at Subcontractor’s expense.

2.06 Cleanup. In the course of performing all Subcontract Work, Subcontractor shall keep the construction site and work areas clean at all times of debris associated with the Subcontract Work and/or employees of Subcontractor and its sub-subcontractors and materialmen at any tier. Subcontractor shall remove from the Project site all wastes and excess materials related to the Subcontract Work. If Subcontractor shall fail to remove construction wastes and/or excess materials, Contractor may proceed to perform such duties, and may deduct all costs incurred in performing such duties from payments otherwise due Subcontractor. If such costs exceed the unpaid Subcontract Price, Subcontractor shall pay Contractor the balance of such excess upon demand. Subcontractor shall participate in a weekly “General Cleanup” as established by the Contractor based upon the weekly average number of Subcontractor’s workers on-site.

2.07 DBE Participation. If Subcontractor is to perform as a Disadvantaged, Small, Minority, or Female-Owned Business Enterprise (“DBE”), Subcontractor (i) agrees that all work required by any Work Order will be performed, managed and supervised by Subcontractor’s own forces, except for work sub-subcontracted to others with Contractor’s prior written consent, and (ii) shall do all things necessary to comply with all applicable federal, state, and municipal laws, rules, regulations, and ordinances governing Subcontractor’s performance and continuing certification as a DBE so that its performance will count toward Contractor’s DBE requirements in the Prime Agreement.

III. TIME, SCHEDULES, AND DELAYS

3.01 Time. Time is of the essence to this Agreement. Subcontractor shall begin the Subcontract Work as soon as instructed by Contractor and shall prosecute the Subcontract Work promptly, efficiently, and in a manner that will not cause delay in the progress of Contractor’s work or other work performed on the Project by other subcontractors.

ALL SUBCONTRACT WORK SHALL BE PERFORMED IN THE NUMBER OF DAYS SHOWN ON THE PROJECT SCHEDULE, NOT TO EXCEED THE DURATION ALLOTED IN CALENDAR DAYS FOR THIS PROPOSAL PACKAGE.

3.02 Project Schedule. Contractor from time to time may issue a Project Schedule applicable to the Subcontract Work. Subcontractor shall perform all the Subcontract Work as scheduled by Contractor, unless Subcontractor notifies Contractor within three (3) calendar days after receipt of schedule requirements that the Subcontract Work cannot be performed within the time scheduled by Contractor. Contractor may, from time to time, reschedule the order of the Subcontract Work or otherwise revise Subcontractor’s schedule. Subcontractor agrees to comply with such schedule revisions, unless Subcontractor notifies Contractor within three (3) calendar days after receipt of schedule revisions that the Subcontract Work cannot be performed within the revised time scheduled by Contractor, without any increase to the Subcontract Price for acceleration or delays.

3.03 Performance Reports. Subcontractor shall furnish periodic progress reports of the Subcontract Work as may be required by Contractor; and shall attend periodic conferences at the Project site to discuss progress. Subcontractor shall attend mandatory weekly progress meetings while working on site and shall provide a weekly progress schedule indicating the work scheduled within the next three weeks of the meeting day. This three week advance schedule shall be detailed and in compliance with the overall project schedule provided in article 3.02.

3.04 Damages for Delay to Contractor. Subcontractor shall be liable for any damages for delay sustained by Contractor caused directly or indirectly by Subcontractor; including, but not limited to, damages, liquidated or otherwise, for which Contractor is liable to Owner. Any such damages shall be deducted from payments due Subcontractor, and, if such damages exceed the amount of payments due, Subcontractor shall pay Contractor upon demand such excess damages due. Subcontractor shall be liable to Contractor for liquidated damages assessed to Contractor by Owner for each and every calendar day the Subcontractor fails to complete the Subcontract Work per the agreed upon Project Schedule.

3.05 Time Extensions, Claims, and Damages for Delay to Subcontractor. CONTRACTOR SHALL NOT BE LIABLE TO SUBCONTRACTOR FOR DELAYS, HINDRANCES, OR INTERRUPTIONS TO THE SUBCONTRACT WORK CAUSED BY THE ACT, NEGLIGENCE OR DEFAULT OF THE OWNER OR OWNER’S REPRESENTATIVE, OR BY REASON OF FIRE OR OTHER CASUALTY, OR ON ACCOUNT OF RIOTS OR STRIKES, OR ON ACCOUNT OF ANY ACTS OF GOD, OR ANY OTHER CAUSES BEYOND CONTRACTOR’S CONTROL, OR ANY CIRCUMSTANCES CAUSED OR CONTRIBUTED TO BY ANY OTHER PARTY PERFORMING A PART OF THE WORK; but, Contractor will cooperate with Subcontractor to enforce any just claim against the Owner or Owner’s representative for delay as may
be allowed under the Prime Agreement. Contractor shall be reimbursed by Subcontractor for any expense, including attorney’s fees, incurred in connection with any claims asserted at the request of Subcontractor. SHOULD SUBCONTRACTOR BE DELAYED IN THE SUBCONTRACT WORK BY CONTRACTOR, THEN SUBCONTRACTOR’S SOLE AND EXCLUSIVE REMEDY AGAINST CONTRACTOR SHALL BE AN EXTENSION OF TIME FOR COMPLETION EQUAL TO THE DELAY CAUSED, AND THEN ONLY IF WRITTEN CLAIM FOR DELAY IS MADE TO CONTRACTOR PRIOR TO INTERFERENCE WITH THE SUBCONTRACT COMPLETION TIME. SUBCONTRACTOR WAIVES AND RELEASES CONTRACTOR FROM ALL CLAIMS AND CAUSES OF ACTION AGAINST CONTRACTOR FOR DAMAGES ARISING OUT OF ANY SUCH DELAYS, HINDRANCES, OR INTERRUPTIONS.

IV. PRICE AND PAYMENTS

4.01 Subcontract Price.

[ ] Lump Sum — The Subcontract Price shall be the lump sum of

($______________________), [including payment and performance bonds] which sum shall be subject to adjustment only as provided in this Agreement.

4.02 Progress Payments.

a. Subcontractor shall submit to Contractor monthly applications for payment, on Contractor’s specific form, not later than the 20th day of each month to enable Contractor to include such requested amounts in its application for payment to the Owner.

Completed, notarized applications shall be scanned in PDF format and e-mailed to both the Contractor’s Project Manager and to invoices@buford-thompson.com with the subject line “Pay Application”. Do not send copies to the Owner and/or Architect. An original “hard copy” is not required.

The pay period for a monthly application for payment submitted on the 20th of the month shall be projected through the 25th of the month. Applications received after the 20th day of the month may not be included in the application for payment and as such will be considered for payment during the next pay period.

The amounts of progress payments requested shall be based on Contractor’s valuations of work performed by Subcontractor, considering the schedule of values submitted by Subcontractor of the various parts of the Subcontract Work aggregating the total price therefore. In applying for payment, Subcontractor shall submit a statement based upon this schedule. Payments shall be made on account of materials not incorporated in the Subcontract Work, but delivered and suitably stored at the site, only upon submission of evidence of payment from suppliers and only in accordance with the terms and conditions of the applicable Contract Documents. No applications for payment will be processed and no payments will be made unless Subcontractor has submitted a sworn statement certifying the name of all Subcontractor’s unpaid materialmen and sub-subcontractors. Contingent upon Contractor’s receipt of payment for that month by the Owner, payments for such applications shall be due after the expiration of the statutory period in which a laborer, materialman, or sub-subcontractor of Subcontractor can perfect a valid lien or bond claim. Contractor may pre-pay any payment without waiving any of Contractor’s rights under this Agreement. Applications for payment shall be accompanied by completed lien waivers and/or bills paid affidavit forms as may be required by Contractor or Owner.

b. Retainage of ten percent (10%) of the sums due hereunder shall be withheld until completion and acceptance of all Subcontract Work to be performed under this Agreement. Ten (10) days after all conditions precedent to Contractor’s obligation to make payment listed below have been completed and satisfied, Contractor’s payment of retainage shall be due if:

(i) Subcontractor has fulfilled the contract requirements for the Subcontract Work of both the Prime Agreement and this Agreement, including the submittal of all information required thereby;

(ii) Subcontractor has completed all Subcontract Work and the Subcontract Work has been inspected, approved, and fully paid for by the Owner; and

(iii) Subcontractor has submitted to Contractor a Bills Paid Affidavit for the Subcontract Work and has a lien and/or bond claim release contingent only upon payment of the retainage amount.

c. In the event Contractor believes any of the conditions listed below warrant such action, Contractor may withhold from any payments due hereunder, the sums deemed necessary to protect Contractor and/or Owner from any losses on account of: (i) Defects in the Subcontract Work not remedied; (ii) Failure of Subcontractor to pay bills for labor and/or materials furnished in connection with the Subcontract Work; (iii) Inability of Subcontractor to complete the Subcontract Work for the unpaid balance of the Subcontract Price; (iv) Failure of Subcontractor to diligently prosecute the Subcontract Work such that damages for delay are likely; (v) Damages to another subcontractor; (vi) Breach by Subcontractor of any provision or obligation of this Agreement or of the Prime Agreement applicable to such Subcontract Work; or (vii) Breach by Subcontractor of any provision or obligation of another subcontract agreement or Work Order with Contractor.

d. Subcontractor agrees that Contractor [may in its sole discretion make any payments] OR [shall make
payments] due hereunder by means of checks jointly payable to Subcontractor and any of Subcontractor’s materialmen or sub-subcontractors. Subcontractor agrees that any such joint check payments made shall constitute payment to Subcontractor under this Agreement for the full amount of such joint check. [Contractor will notify Subcontractor (5) five days prior to making payments by joint checks and afford Subcontractor the opportunity to correct the situation resulting in Contractor option to make payment by joint check.] OR [All invoices for the materials and services provided to the Subcontractor must be job-marked and must be scanned in PDF format and sent each month with the Application for Payment. Provide a list within 30 days of execution of this Agreement of all material suppliers and subcontractors, at any tier, with an approximate contract amount for each. This list can be modified monthly as needed. No payment will be made until this list has been received.

e. In the event Contractor receives notice of a lien claim or bond claim from Subcontractor’s materialmen, sub-subcontractors or laborers, at any tier, Contractor may, at Contractor’s option, directly pay any such claimant. Contractor will notify Subcontractor (5) five days prior to making direct payments and afford Subcontractor the opportunity to make payment and obtain a claim release or lien release. Any such direct payment to a claimant and any expenses in processing such claim and payment shall be deducted from payments otherwise due Subcontractor, and if such payments and expenses exceed the amount of payments due, Subcontractor shall pay Contractor upon demand such excess amount.

f. If Contractor fails to make payments to Subcontractor which are due pursuant to the terms of this Agreement, after receipt of payment by the Owner for the Subcontract Work, then Subcontractor may, upon seven (7) days written notice to Contractor, stop work without prejudice to any other remedy Subcontractor may have, but only if Contractor fails to cure after receipt of notice.

4.03 Final Payment. Contractor’s obligation to make final payment to Subcontractor under this Agreement is specifically contingent upon the following conditions, which are conditions precedent to final payment: (a) Submittal by Subcontractor of an affidavit that all payrolls, bills for material and equipment, and other indebtedness connected with the Subcontract Work, have been paid except for bills, invoices and/or indebtedness specifically listed and identified in the affidavit; (b) submittal by Subcontractor of lien releases, or bond claim releases on bonded projects, indicating that all of Subcontractor’s materialmen, laborers, and sub-subcontractors have been fully paid and are releasing all statutory lien rights and releasing all bond claims, except claims specifically listed and identified in the releases; (c) consent of Surety to final payment, if required; (d) approval by the Owner, Architect/Engineer, and Contractor of the Subcontract Work and final verification of the quantities of the Subcontract Work performed; and (e) receipt by Contractor of all payments related to the Subcontract Work, including any retainage withheld by the Owner from Contractor. SUBCONTRACTOR’S ACCEPTANCE OF FINAL PAYMENT SHALL CONSTITUTE A WAIVER OF ALL CLAIMS BY SUBCONTRACTOR RELATING TO THE SUBCONTRACT WORK OR TO CONTRACTOR’S WORK CONNECTED WITH THE APPLICABLE PROJECT OR TO THE CONTRACT DOCUMENTS, BUT SHALL IN NO WAY RELIEVE SUBCONTRACTOR OF LIABILITY FOR THE OBLIGATIONS FOR REPLACING FAULTY OR DEFECTIVE WORK APPEARING AFTER FINAL PAYMENT.

4.04 Contingent Payment Obligation. Contractor’s obligation to make progress payments and final payment to Subcontractor under this Agreement is expressly contingent upon and subject to Owner’s acceptance of the Subcontract Work and Contractor’s receipt of payment from Owner for the Subcontract Work. It is expressly understood and agreed to by Subcontractor that such receipt of payment by Contractor from the Owner is a condition precedent to Contractor’s obligation to pay Subcontractor under this Agreement.

V. CHANGES AND ADDITIONAL COMPENSATION

5.01 Changes. Contractor, from time to time, without invalidating this Agreement, may order changes in the Subcontract Work within the general scope thereof consisting of additions, deletions or other revisions to the Subcontract Work. Subcontractor, prior to the commencement of such changed or revised work, shall promptly submit to Contractor any claim for adjustment to the Subcontract Price or Project Schedule because of such changed or revised work. All Change Orders, Modifications, Claims for Adjustments, and Notices provided in this Agreement shall be in writing. Subcontractor’s overhead and profit shall be no more than ten percent (10%) of its actual labor, material, and equipment costs. In the event that Subcontractor’s costs include second and third tier subcontractors, the maximum amount of mark-up for each sub-subcontractor at any tier shall be limited to ten percent (10%) for overhead and profit and the sub-subcontractor shall be limited to four (4%) mark-up on the work performed by a sub-subcontractor at any tier. In no event shall total mark-up for overhead, profit or fee in any work which involves a subcontractor, or sub-subcontractor at any tier, exceed 14% of the total cost of the change in the Work.

5.02 Notice Required. SUBCONTRACTOR SHALL NOT BE ENTITLED TO ANY EXTRA COMPENSATION OR ADDITIONAL PERFORMANCE TIME UNLESS NOTICE IS GIVEN PRIOR TO BEGINNING THE WORK FOR WHICH CLAIM FOR EXTRA PAYMENT OR EXTRA TIME IS MADE; OTHERWISE, SUCH CLAIM SHALL BE WAIVED. Subcontractor shall not perform any changed, revised, or extra work unless prior to the performance of such work, either: (i) Contractor and Subcontractor enter into a modification changing the Subcontract Price and/or Performance Schedule for such changed Subcontract Work; or (ii) Contractor, after
receiving Subcontractor’s claim, provides Subcontractor written notice to proceed with the changed, revised, or extra Subcontract Work absent such modification.

5.03 Finality of Owner’s Decision. Notwithstanding anything contained herein to the contrary, IF THE WORK FOR WHICH SUBCONTRACTOR CLAIMS EXTRA COMPENSATION TO BE DUE IS DETERMINED BY THE OWNER, OR THE OWNER’S REPRESENTATIVE, TO BE SUCH THAT CONTRACTOR IS NOT ENTITLED TO ADDITIONAL COMPENSATION FOR SUCH WORK FROM THE OWNER, THEN SUBCONTRACTOR WAIVES ITS RIGHT TO EXTRA COMPENSATION FOR SUCH WORK AND RELEASES CONTRACTOR FOR ANY LIABILITY OF PAYMENT THEREFOR, EXCEPT TO THE EXTENT CONTRACTOR RECOVERS FROM OWNER ON A CLAIM PURSUED AT SUBCONTRACTOR’S REQUEST AND EXPENSE. Subject to Subcontractor’s right to participate in a proceeding disputing such a decision as provided in the Prime Agreement, the decision of the Owner, or the Architect/Engineer as the Owner’s representative, shall be final with regard to whether extra compensation is due and with regard to the amount of such extra compensation.

5.04 Claims Against Owner. Contractor will cooperate with Subcontractor to submit any valid and enforceable claim against the Owner or the Owner’s representative for extra compensation or other relief allowed under the applicable Prime Agreement. As a condition precedent to Contractor’s agreement to cooperate in the submittal of Subcontractor’s claim against the Owner, Subcontractor agrees to pay for any expense, including attorney’s fees, incurred in connection with claims asserted at the request of Subcontractor, including the pre-payment of any retainage fee that may be requested. The intended result of this Agreement is to permit pass-through claims as authorized by Texas law, with the express understanding that Contractor’s liability to Subcontractor on said claims is limited to the funds collected from Owner on the claims which Contractor asserts on behalf of Subcontractor, after deduction of Contractor’s actual cost (such as expert witness fees, attorneys’ fees, Court costs, etc.) incurred in pursuing said claims.

5.05 Proceeding with Work. If Subcontractor and Contractor do not agree upon either (i) whether or not Subcontractor’s written notice requesting extra compensation constitutes changed work or additional work beyond the original scope of the Subcontract Work, or (ii) the reasonable amount of extra compensation due for the changed or extra work, then Subcontractor shall proceed with the work in accordance with the instructions of Contractor. In such event, Subcontractor shall maintain and present to Contractor, in such form as Contractor may prescribe, an itemized accounting of costs, together with appropriate supporting data, for all extra labor, materials, and equipment expended at the Project site by Subcontractor for the changed or additional work. For changed or additional work beyond the scope of the original Subcontract Work, Subcontractor shall be entitled to recover, subject to the requirements for notice, all actual costs for labor, material, and equipment, expended at the Project site for the changed or additional work, minus the costs for any deleted work, plus a sum equal to the percentage amount allowed in the Prime Agreement for Subcontractor’s overhead and profit. Subcontractor’s overhead and profit shall be no more than ten percent (10%) of its actual labor, material, and equipment costs. In the event that Subcontractor’s costs include second and third tier subcontractors, the maximum amount of mark-up for each sub-subcontractor at any tier shall be limited to ten percent (10%) for overhead and profit and the sub-subcontractor shall be limited to four (4%) mark-up on the work performed by a sub-subcontractor at any tier. In no event shall total mark-up for overhead, profit or fee in any work which involves a subcontractor, or sub-subcontractor at any tier, exceed 14% of the total cost of the change in the Work.

VI. INSURANCE AND INDEMNIFICATION

6.01 Insurance. 

a. PRIOR TO STARTING THE SUBCONTRACT WORK Subcontractor shall procure and maintain in force (i) statutory workers’ compensation insurance for all Subcontractor’s employees and/or workmen at the Project site performing the Subcontract Work and employer’s liability insurance with $500,000.00 coverage, (ii) commercial general liability insurance, (iii) business automobile liability insurance, (iv) umbrella insurance, and (v) such other insurance to the extent required by the Prime Agreement for the Subcontract Work. Subcontractor’s commercial general liability, automobile liability, and umbrella insurance shall be primary and non-contributory; shall contain an endorsement listing the Owner and Buford-Thompson Company L.L.C. as additional insured (CGL policy shall use endorsement CG 20 10 10 01 for Ongoing Operations and CG 20 37 10 01 for Completed Operations, or alternatively, endorsement CG 20 10 11 85, such that coverage is provided to the additional insured parties for completed operations) (Business Automobile Liability policy shall use endorsement CA2048 or equivalent); shall have a per project aggregate endorsement; and shall be written for not less than limits of liability as listed below. The limits listed below are minimum amounts; in the event the policy provides additional coverages and limits, subcontractor shall afford full coverages and limits of policy to BTC.

(i) Worker’s Compensation and Employers’ Liability

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<th>Workers’ Compensation</th>
<th>Employer’s Liability</th>
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<tr>
<td>$1,000,000.00 Each Accident</td>
<td>$1,000,000.00 Disease-Policy Limit</td>
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<tr>
<td>$1,000,000.00 Disease Each Employee</td>
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(ii) Commercial General Liability.

<table>
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<th>General Aggregate per Project</th>
<th>Products/ Completed</th>
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</thead>
<tbody>
<tr>
<td>$2,000,000.00 Each Occurrence</td>
<td></td>
</tr>
<tr>
<td>$2,000,000.00 Products/ Completed</td>
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</table>
Subcontractor shall deliver to Contractor an original Certificate of Insurance, meeting statutory requirements, which evidences the coverages and the endorsements required herein and which states that the coverages afforded under the policies will not be canceled or terminated unless at least 30 days written notice is given to Contractor. If Subcontractor subcontracts any portion of the Subcontract Work, Subcontractor shall deliver to Contractor for each of Subcontractor’s sub-subcontractors or employee leasing companies, an original Certificate of Insurance which evidences the same coverages and endorsements for workers’ compensation insurance as required herein. All insurance companies providing coverage to Subcontractor pursuant to the requirements of this Agreement shall have a minimum Best’s Rating of A- and a Financial Size Category listing of no lower than VII, both as provided by A.M. Best Company, Inc. Upon request from Contractor, Subcontractor shall deliver a copy of all policies of insurance required herein.

b. The commercial general liability policy shall contain a contractual liability endorsement, an endorsement listing Buford-Thompson Company L.L.C., as additional insured, the Owner as additional insured and a products/completed operations endorsement. Commercial general liability insurance may be arranged under a single policy for the full limits required, or by a combination of underlying policies with the balance provided by an umbrella liability policy. The Business Automobile Liability Policy shall contain an endorsement listing the Contractor as additionally insured and shall contain a waiver of subrogation endorsement in favor of Contractor and its employees. Subcontractor shall maintain the coverage listed above, including the additional insured coverage and the completed operations coverage, for a period of two (2) years after final payment. Subcontractor’s insurance coverage shall not include any of the following endorsements, excluding or limiting coverage:

(i) Contractual Liability Limitation, CG 21 39;
(ii) Amendment of Insured Contract Definition, CG 24 26;
(iii) Exclusion-Explosion, Collapse and Underground Property Damage Hazard, CG 21 42 or CG 21 43;
(iv) Limitation of Coverage to Designated Premises or Project, CG 21 44 07 98;
(v) Exclusion-Damage to Work Performed by Subcontractors on Your Behalf, CG 22 94 or CG 22 95;
(vi) Any type of Construction Defect Completed Operations exclusion;
(vii) Any type of Punitive, Exemplary or Multiplied Damages exclusion; and/or
(viii) Any type of Habitational, Residential, or Condominium Exclusion.

c. The Workers’ Compensation Policy shall contain a waiver of subrogation endorsement in favor of Contractor and its employees. Subcontractor shall execute a joint agreement with Contractor, Texas DWC-85, stating that Subcontractor is an independent contractor and not an employee of Contractor.

d. Prior to starting the Subcontract Work, Subcontractor shall be solely responsible for insuring Subcontractor’s equipment against physical loss or damage of any kind, and shall be responsible for the deductible portion of each claim covered by the Builder’s Risk Insurance procured by the Owner. The Builder’s Risk Insurance will be provided by the Owner, who shall determine all limits and deductibles.

f. SUBCONTRACTOR WAIVES ANY CLAIM AGAINST CONTRACTOR, OWNER OR THEIR EMPLOYEES AND OFFICERS, FOR ANY AND ALL LOSSES, INJURIES, DAMAGES OR EXPENSES WHICH ARE COVERED BY POLICIES OF INSURANCE, EXCEPT SUCH RIGHTS AS SUBCONTRACTOR MAY HAVE TO THE PROCEEDS OF SUCH INSURANCE.

g. The requirements for additional insured coverage contained in this Agreement are intended to comply with the requirements of Section 151.104 of the TEXAS INSURANCE CODE. Said requirements shall be construed to comply with the requirements of Texas Law and any provision in the requirements for additional insured coverage contained in this Agreement or the Prime Agreement that are determined to expand or restrict the permissible scope of additional insured coverage allowed by Texas law shall be disregarded and said requirements shall be read to require additional insured coverage to the fullest extent permitted by Texas law.

6.02 INDEMNIFICATION.

a. ONLY TO THE EXTENT AND UNDER THE CONDITIONS ALLOWED UNDER TEXAS LAW, SUBCONTRACTOR AGREES TO DEFEND, INDEMNIFY AND HOLD HARMLESS CONTRACTOR, THE OWNER, AND THEIR OFFICERS, PARTNERS, REPRESENTATIVES, AND EMPLOYEES (THE “INDEMNIFIED PARTIES”) FROM AND AGAINST ALL CLAIMS, DAMAGES, LOSSES, EXPENSES (INCLUDING ANY ARBITRATION OR LITIGATION EXPENSES), AND/OR ATTORNEYS’ FEES
ARISING OUT OF, RELATED TO, OR CONNECTED WITH, THE PERFORMANCE, OR FAILURE IN PERFORMANCE, OF THE SUBCONTRACT WORK UNDER THIS AGREEMENT, EVEN IF ANY SUCH CLAIM, DAMAGE, LOSS, EXPENSE, AND/OR ATTORNEYS’ FEES IS CAUSED BY A NEGLIGENCE ACT OR OMISSION BY ANY OF THE INDEMNIFIED PARTIES. THE EXPRESSED INTENTION OF THE PARTIES IS THAT SUBCONTRACTOR’S INDEMNITY HEREBIN WILL SURVIVE THE TERMINATION OF THIS AGREEMENT AND WILL INDEMNIFY AND PROTECT THE INDEMNIFIED PARTIES FROM THE CONSEQUENCES OF THEIR OWN NEGLIGENCE, BUT ONLY TO THE EXTENT AND UNDER THE CONDITIONS ALLOWED UNDER TEXAS LAW.

b. In any and all claims against any of the Indemnified Parties by an employee of Subcontractor, or anyone directly or indirectly employed by him or anyone for whose acts he may be liable, the indemnification obligation under this Paragraph 6.02 shall not be limited in any way by any limitation or bar under the Texas Workers’ Compensation Act, or other employee benefit acts.

VII. BONDS AND WARRANTIES

7.01 Performance/Payment Bonds. If required by Contractor, a Performance Bond and a Payment Bond in a form satisfactory to Contractor shall be furnished by Subcontractor in the full amount of the price of the Subcontract Work as set forth herein. If Contractor requires such Bonds after this Agreement is issued, the cost thereof shall be paid by Contractor as a change to the Subcontract Work; otherwise it shall be included in the Subcontract Price. This obligation shall continue throughout the term of this Agreement and may be required at any time during the performance of the Subcontract Work. These bonds shall be furnished by a certified company on the Department of the Treasury’s Listing of Approved Sureties (Department Circular 570), current as of the date the bonds are requested, with sufficient underwriting limitations published therein to cover the penal sum (face amount) of the bonds and shall have the following minimum requirements:

Best’s Rating of B+ to B++ and a Financial Size Category listing of no lower than IX (9), or, Best’s Rating of A- to A++ and a Financial Size Category listing of no lower than IV (4). Bonds shall be executed and approved by Contractor prior to beginning work.

7.02 Conformance with Contract Documents. Subcontractor warrants to the Owner and Contractor that all the Subcontract Work shall be performed in a good and workmanlike manner and shall be free from any and all defects due to faulty workmanship and/or materials and shall comply with all requirements of the applicable Contract Documents. Subcontractor shall promptly remove, replace, correct, and/or repair any portion of the Subcontract Work that Contractor or the Owner determines is defective or is not in compliance with the applicable Contract Documents. Subcontractor further agrees to execute any special guarantees or warranties as required by the terms of the Contract Documents and provide all close-out documents required by the Contract Documents in connection with the Subcontract Work, within 30 days of Substantial Completion as declared by the Owner and Architect, and as a condition precedent to final payment. All required warranties will be written so that the effective date is from the “Date of Substantial Completion” and the duration is for One (1) year. The date of Substantial Completion will be issued by the Owner and Architect upon submission and acceptance of all required close-out documentation. All documentation requiring an effective date shall be dated as “DATE OF SUBSTANTIAL COMPLETION AS ESTABLISHED BY OWNER AND ARCHITECT” upon submission for review.

7.03 Payments of Laborers and Materialmen. Subcontractor warrants that all laborers, materialmen and sub-subcontractors, at any tier, providing labor, equipment, or materials for the Subcontract Work will be paid such that neither the Owner, nor Contractor, nor Owner’s property, nor Contractor’s Surety will be subject to any claims, liens, or encumbrances.

VIII. SUPPLEMENTATION OF WORK AND TERMINATION

8.01 Supplementation by Contractor. Should Subcontractor fail at any time to supply a sufficient number of properly skilled workmen and/or sufficient materials and/or equipment of the proper quantity and/or quality, as determined by Contractor in its sole discretion, or fail in any respect to prosecute the Subcontract Work with promptness and diligence, or fail to promptly correct defective Subcontract Work or fail in the performance of any of the obligations contained in the applicable Contract Documents, Contractor may, at its option without notice, provide such labor, materials and/or equipment and deduct the cost thereof, together with all loss or damage occasioned thereby, from any money then due or thereafter to become due to Subcontractor under this Agreement. If such cost, loss, and damage exceed the unpaid Subcontract Price, Subcontractor shall pay Contractor the balance of such excess upon demand.

8.02 Termination of Subcontract for Default. If Subcontractor at any time shall refuse or neglect to supply sufficient properly skilled workmen, or materials or equipment of the proper quality and/or quantity, or fail in any respect to prosecute the Subcontract Work with promptness and diligence, or cause by any action or omission the stoppage or interference with the work of Contractor or other subcontractors, or fail in performance of any of the covenants contained in the applicable Contract Documents, or be unable to meet its debts as they mature, Contractor may, at its option, at any time terminate the Subcontract Work for Subcontractor’s default by delivering written notice of
termination to Subcontractor. Thereafter, Contractor may take possession of the materials and equipment of Subcontractor at the Project site, and through himself or others provide labor, equipment and materials to prosecute and complete the Subcontract Work on such terms and conditions as shall be deemed necessary. Contractor shall deduct the cost thereof, including without restriction all charges, expenses, losses, costs, damages, and attorneys’ fees, incurred as a result of Subcontractor’s failure to perform, from any money then due or thereafter to become due to Subcontractor under this Agreement. If such completion cost exceeds the unpaid Subcontract Price, Subcontractor shall pay Contractor the balance of such excess upon demand.

8.03 Termination for Convenience. Contractor may, at its option, at any time, terminate without Subcontractor’s default the whole or any part of the Subcontract Work under this Agreement for the convenience of Contractor. Subcontractor agrees that upon any such termination, Subcontractor’s sole remedy shall be payment of the lesser of: (i) the appropriate share of the amount which Contractor is paid under the Prime Agreement for the Subcontract Work properly completed by Subcontractor as of the date of such termination; or (ii) the value of all work properly performed by Subcontractor, less all payments Subcontractor has previously received for the Subcontract Work performed. The value shall not exceed Subcontractor’s actual costs for labor, materials, and equipment, plus fifteen percent (15%) for profit and overhead. Subcontractor waives all other claims for damages, including lost or anticipated profits, arising from or related to any such termination by Contractor.

8.04 Payments After Termination. If Contractor terminates the Subcontract Work under this Agreement pursuant to paragraph 8.02 above, then Subcontractor shall not be entitled to any further payments under this Agreement until the Subcontract Work has been completed and accepted by the Owner, and payment therefor has been received by Contractor from the Owner for any money then due or thereafter to become due to Subcontractor under this Agreement. If the cost to complete the Subcontract Work (plus all charges, expenses, losses, costs, and attorneys’ fees recoverable under this Agreement) exceeds the unpaid Subcontract Price, Subcontractor shall pay Contractor the balance of such excess upon demand. In the event Contractor terminates the Subcontract Work under this Agreement for default, as provided in paragraph 8.02, and Subcontractor is subsequently found not to be in default, then Contractor’s termination for default shall be deemed for all purposes to be a termination for convenience as provided in paragraph 8.03.

IX. DISPUTE RESOLUTION

9.01 Dispute Resolution. Except as provided herein, all claims, disputes and controversies arising out of or relating to the Subcontract Work, or this agreement, including claims for extra work or changed conditions to or related to the Subcontract Work, shall be decided pursuant to Texas law by a State District or County Court in Tarrant County, Texas. BOTH CONTRACTOR AND SUBCONTRACTOR AGREE TO WAIVE TRIAL BY JURY. Except, however, a claim for contribution and/or indemnity shall be asserted by the Contractor and decided by the Court, in the suit in which claims are brought against the Contractor for which the Contractor seeks contribution and/or indemnity from the Subcontractor; and a claim by the Subcontractor against the Contractor in which the Contractor asserts the claim, in whole or in part, against the Owner shall be asserted and resolved pursuant to the claims and dispute resolution procedures in the Prime Agreement. If the forum for, or procedure for resolution of, a dispute or controversy between the Contractor and Subcontractor is contested by either party, the issue shall be submitted to a court of competent jurisdiction in Tarrant County, Texas, and all other proceedings shall be stayed until the determination by the Court.

9.02 Claims under Prime Agreement. In the event the Contractor and Owner or others arbitrate or litigate matters relating to Subcontract Work, it shall be the responsibility of the Subcontractor to prepare and present the Contractor’s case, to the extent the proceedings are related to the Subcontract Work under this Agreement, and Subcontractor shall be bound by the result of such arbitration or litigation to the same degree as Contractor.

9.03 Continued Performance Pending Dispute Resolution. Subcontractor shall carry on the Subcontract Work and maintain Subcontractor’s progress during any litigation proceedings.

9.04 Statute of Repose: Subcontractor and Contractor agree that for purposes of this Agreement the statute of repose shall commence to run thirty (30) days after the final completion of the entire Project, unless Contractor has agreed to a shorter period in the Prime Agreement, in which case the period provided in the Prime Agreement shall control.

X. ADDITIONAL OBLIGATIONS

10.01 Additional Obligations of Subcontractor. In addition to the other engagements of Subcontractor hereunder, Subcontractor hereby agrees that with regard to this Agreement Subcontractor shall:

a. Not discriminate against any employee or applicant for employment because of race, creed, color, age, sex, national origin, or disability.

b. Not assign rights under this Agreement or any amounts due or to become due hereunder without the written consent of Contractor; nor subcontract the whole of any Subcontract Work without the written consent of Contractor; nor further subcontract portions of any Subcontract Work without written notification to Contractor.

c. Promptly submit shop drawings and samples as requested by Contractor in order to carry on the Subcontract Work efficiently without delay in the progress of the Project.
Subcontractor shall resubmit, within three (3) working days, any shop drawings or submittals returned for correction. All shop drawings, submittals, and samples are to be checked, signed, and dated by a duly authorized representative of Subcontractor, certifying that the same meets all requirements of the Contract Documents and is in accordance with the construction plans and specifications.

d. Comply with all Federal, State, and local laws and ordinances relating to construction of buildings, or structures, or improvements and give adequate notices relating to the Subcontract Work to the proper authorities, and secure and pay for all necessary licenses or permits to carry on the Subcontract Work as described in the applicable Contract Documents.

e. Comply with Federal and State laws relating to reporting and payment of (i) wages (including but not limited to, the Davis Bacon Act if applicable), (ii) federal and state payroll taxes on wages, including but not limited to, Federal Income Tax withholding provisions of the Internal Revenue Code, Federal Insurance Contribution Act (FICA) payments, and Federal Unemployment Tax Act (FUTA) payments, and (iii) applicable state unemployment tax payments. Comply with all prevailing wage rates as required in the Contract Documents.

f. Comply with all Federal, State, and local laws, including, but not limited to, the rules and regulations promulgated pursuant to statute related to the Texas Workers’ Compensation Act; Consolidated Omnibus Budget Reconciliation Act (COBRA); Immigration Reform and Control Act of 1986; Consumer Credit Protection Act; Title 3, Title 7 of the 1964 Civil Rights Act; Age Discrimination Employment Act; Employees Retirement Income Security Act (ERISA); and Occupational Safety and Health Act of 1970 (OSHA), the Construction Safety Act of 1969, and the Clean Water Act, with all regulations promulgated by the Environmental Protection Agency including Storm Water Pollution Prevention Plan requirements. Subcontractor shall defend and be responsible for all citations, fines, and penalties and shall indemnify and hold Contractor and all other subcontractors harmless from any loss sustained by reason of any failure to so comply. As an independent contractor, Subcontractor is exclusively responsible for compliance with these regulations and laws and for the safety of Subcontractor’s employees.

g. Maintain a qualified person approved by Contractor on the job at all times.

h. Adopt a Drug Free Workplace Program equal to or exceeding Contractor’s Drug Free Workplace Program, including Subcontractor’s pre-employment and post-accident testing of employees and Subcontractor’s permanent removal of employees failing tests or refusing to submit to tests.

i. Exercise every precaution necessary to eliminate asbestos and/or lead-containing materials from any of the materials incorporated in the Subcontract Work. If asbestos fibers or lead contaminants are found in materials associated with the Subcontract Work, Subcontractor shall be responsible for determining the source of and removing all materials containing asbestos fiber or lead contaminants.

j. Promptly provide Contractor notice of any condition which could increase Contractor’s cost of the Subcontract Work or Contractor’s liability for claims or damages, to allow Contractor to confirm the condition and mitigate damages arising from the condition. SUBCONTRACTOR WAIVES ALL CLAIMS AND DAMAGES AND FULLY RELEASES CONTRACTOR FROM LIABILITY FOR ANY CLAIMS OR DAMAGES WHICH ARISE PRIOR TO SUBCONTRACTOR’S NOTICE TO CONTRACTOR OF ANY SUCH CONDITION.

k. This project is exempt from taxes in accordance with the Owner’s Tax-Exempt status.

l. There is the potential for numerous existing underground utilities to be present at the site. Known utilities are either (1) shown on the contract documents, or (2) have been located by a private utility locate company. A copy of the drawing showing the locations of the known existing utilities is located in the job site office trailer. If Subcontractor, or any sub-subcontractor at any tier, damages a known utility, the cost to repair the damage will be deducted from the subcontract amount. If such cost exceeds the unpaid Subcontract Price, Subcontractor shall pay Contractor the balance of such excess upon demand.

m. No “hot” work will be allowed of any electrical components, without written authorization from the Contractor’s Safety Director.

n. Equipment/Man Lifts are not allowed on any foundation/slab without written approval by Contractor. Any damages resulting from equipment placed on a foundation/slab will be repaired at Subcontractor’s expense.

o. Subcontractor acknowledges Exhibit A for a list of drawings, specifications and addenda on which the Subcontract Agreement is based.

p. Subcontractor acknowledges and agrees to comply with Exhibit B – Criminal History Background Checks and will comply with obtaining a criminal history background check utilizing the Fingerprint-based Applicant Clearinghouse of Texas.

q. Subcontractor shall require all construction workers, whether the Subcontractor’s own forces, or the forces of a sub-subcontractor at any tier, to wear identification tags on the front of their persons during all times that they are on the Owner’s property. Such identification tags shall provide identification of the construction worker by a number, name and photo of person in a typeface large enough to be seen from a reasonable distance.

r. In accordance with Article 5.02 any additional work outside the scope of this Subcontract Agreement must be
approved in writing by Contractor prior to Subcontractor proceeding with work. If the final cost cannot be determined at the time of approval to proceed, then the actual cost must be submitted within two weeks of completing the work. Any additional work including remedial work resulting in backcharges to other Subcontractors must be approved in writing by Contractor prior to proceeding with the work. Contractor, in its sole discretion, shall determine final, actual costs due to Subcontractor, if the actual cost was not determined at the time Subcontractor received written notice to proceed, and the final, actual cost was not submitted within two weeks of completing the work.

s. Electronic submittals will be required in addition to any “hard copies”.

t. Subcontractor will provide all extended warranties and/or guarantees required by the contract documents, whether specified to be provided by a manufacturer or written by subcontractor. Subcontractor shall provide warranties specified even if not available from a lower tier subcontractor or manufacture. In the event the specified warranties are not available from a lower tier subcontractor or manufacture, then subcontractor will be responsible to provide warranties and/or guarantees in a form acceptable to the Owner.

XI. MISCELLANEOUS

11.01 Notices. All notices required to be given under this Agreement shall be deemed delivered when transmitted via facsimile during normal business hours to the following facsimile number, provided the notice is also transmitted via e-mail on the same day during normal business hours to the following e-mail address:

CONTRACTOR:
BUFFORD - THOMPSON COMPANY, LLC
P.O. Box 151829
Fort Worth, Texas 76108-5829
Facsimile: (817) 467-5619
E-Mail: info@buford-thompson.com

OWNER:
Mr. Kyle Owen Associate Vice President Facility Services
Midwestern State University
3410 Taft Blvd
Wichita Falls, Texas 76308
Facsimile: (940) 397-4530

Copies to:
Mr. Stephen Shelley Director of Purchasing/Contract Manager
Midwestern State University
3410 Taft Blvd
Wichita Falls, Texas 76308
Facsimile: (940) 397-4530

SUBCONTRACTOR:
[Subcontractor’s Name]

Notices transmitted via facsimile or e-mail after normal business hours shall be deemed delivered the following business day.

11.02 Conflicts in Terms. In the event there is a conflict between the terms of this Agreement and the other Contract Documents, the terms of this Agreement shall control over the other Contract Documents, unless the terms of the Prime Agreement impose a more stringent requirements upon Contractor with regard to the Subcontract Work, in which case the more stringent terms shall control.

11.03 Attorneys’ Fees. In the event that Contractor is required to retain the services of an attorney to enforce this Agreement and/or the Unconditional Guaranty, or to defend against any cause of action, claim, or counterclaim brought by Subcontractor on which Subcontractor does not prevail, then Contractor shall be entitled to recover the attorneys’ fees and costs incurred, in addition to other remedies to which Contractor is entitled under Texas law. In the event that Subcontractor is required to retain the services of an attorney to enforce this Agreement and Subcontractor prevails in asserting a valid claim under this Agreement, then Subcontractor shall be entitled to recover attorneys’ fees and costs incurred, in addition to other remedies to which Subcontractor is entitled under Texas law.

11.04 No Waiver. Contractor’s waiver of any right hereunder in one or more instances shall not constitute a waiver as to future enforcement of such right (by way of example and without limitation, waiver of right to receive releases with one or more payment applications shall not constitute a waiver of the right to receive releases with future payment applications).

11.05 Unconditional Guaranty. To induce Contractor to enter into this Agreement with Subcontractor and for other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the undersigned Guarantor hereby unconditionally, irrevocably and absolutely, jointly and severally guarantees the performance of each and every obligation of Subcontractor, including warranties, under this Agreement and/or any modifications or Change Orders issued pursuant to the terms of this Agreement. The obligation of the Guarantor shall be performable upon demand by Contractor and shall be unconditional, irrespective of any alleged irregularity or equitable discharge of any Surety. Guarantor hereby waives all diligence, presentment, demand, and protest, and agrees to fully and faithfully perform Subcontractor’s obligations under this Agreement upon demand by Contractor. Guarantor further agrees that Contractor may demand performance of the obligations under this Agreement without any obligation by Contractor to first: (a) proceed against Subcontractor; (b) proceed against any surety bond or exhaust any collateral held by Contractor as security for performance of Subcontractor’s

[Subcontractor’s Street Address]
[Subcontractor’s City, State, Zip]
Facsimile: [Subcontractor’s Fax #]
E-Mail: [Add Desired E-Mail]
obligations guaranteed hereby; or (c) pursue any remedy it may now have or hereafter have against Subcontractor. Guarantor further agrees that at any time, without notice to Guarantor, Contractor and Subcontractor may agree to: (a) extend the time for Subcontractor’s performance or compliance within any covenant, agreement, or warranty under this Agreement; (b) amend or change the scope of any Subcontract Work by Change Order; or (c) alter or amend any time for payment or amounts of payment, whether such payments are partial payments or final payment; all without affecting the liability and obligation of Guarantor. Guarantor hereby acknowledges that the withdrawal from, termination of, or restructuring of, any ownership interest that Guarantor may have in Subcontractor, shall not alter, affect, or in any way limit the obligations of the Guarantor hereunder. Guarantor further consents and agrees that this guaranty agreement shall be subject to and governed by the terms of the dispute resolution provisions in this Agreement and that any claims by either Guarantor or Contractor arising out of or relating to the obligations of this guaranty agreement shall be subject to the dispute resolution clause in this Agreement. Guarantor hereby agrees that in the event of the termination, liquidation, or dissolution of Subcontractor, this unconditional guaranty shall continue in full force and effect. The obligations of Guarantor shall not terminate until Subcontractor has fully performed all obligations under this Agreement, including any and all modifications thereof.

EXECUTED in Tarrant County, Texas effective as of the date stated above.

By: _______________________________
Name: _______________________________
Title: _______________________________

SUBCONTRACTOR:

[Subcontractor’s Name]

By: _______________________________
Name: _______________________________
Title: _______________________________

GUARANTOR:

By: _______________________________
Name: _______________________________
Title: _______________________________
MEMORANDUM

DATE: May 29, 2014

TO: Subcontractors

FROM: Sammy C. Martin, President

SUBJECT: Insurance Requirements

This memorandum will detail Buford-Thompson Company’s insurance requirements for subcontractors. In accordance with Article VI, Section 6.01 of your Subcontract Agreement listed as follows:

6.01 Insurance

a. PRIOR TO STARTING THE SUBCONTRACT WORK the Subcontractor shall procure and maintain in force statutory workers' compensation insurance for all subcontractor's employees and/or workmen at the project site, employers liability insurance with $1,000,000.00 coverage, (ii) commercial general liability insurance (including explosion, collapse and underground property damage (“XCU”) coverage), (iii) business automobile liability insurance and (iv) such other insurance, required by the Prime Contract for the Subcontract Work. The subcontractor's commercial general and automobile liability insurance, as required by this provision shall be primary and non-contributory; shall contain an endorsement listing the Contractor as additional insured (endorsement CG 20 10 10 01 and CG 20 37 10 01, such that coverage is provided to the additional insured parties for completed operations); waiver of subrogation endorsement in favor of Contractor and its employees and shall be written for not less than limits of liability as follows:

(i) Workers’ Compensation and Employers’ Liability

<table>
<thead>
<tr>
<th>Workers' Compensation</th>
<th>Workers' Compensation Statutory Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employers’ Liability</td>
<td></td>
</tr>
<tr>
<td>$1,000,000.00</td>
<td>Each Accident</td>
</tr>
<tr>
<td>$500,000.00</td>
<td>Disease-Policy Limit</td>
</tr>
<tr>
<td>$500,000.00</td>
<td>Disease-Each Employee</td>
</tr>
</tbody>
</table>

(ii) Commercial General Liability

| $1,000,000.00         | Each occurrence                         |
| $2,000,000.00         | General Aggregate per project           |
| $2,000,000.00         | Products/Completed Operations Aggregate |
| $1,000,000.00         | Personal and Advertising Injury         |
| $5,000,000.00         | Pollution Liability (required for any subcontractor performing abatement work) |
| $1,000,000.00         | Umbrella (minimum)                      |

(iii) Business Automobile Liability

| $1,000,000.00         | Combined Single Limit                   |
| $500,000.00           | Bodily Injury – Each Person              |
| $1,000,000.00         | Bodily Injury – Each Occurrence         |
| $500,000.00           | Property Damage - Per Accident          |
(iv) Umbrella Liability.
$2,000,000.00 Each Occurrence
$1,000,000.00 Aggregate

(v) Pollution Liability.
$1,000,000.00 Each Occurrence

b. The commercial general liability policy shall contain a contractual liability endorsement, an endorsement listing Buford-Thompson Company L.L.C., as additional insured, and a products/completed operations endorsement. **Commercial general liability insurance may be arranged under a single policy for the full limits required or by a combination of underlying policies with the balance provided by an umbrella liability policy.** The Business Automobile Liability Policy shall contain an endorsement listing the Contractor as additionally insured. The Subcontractor shall maintain the coverage listed above including the additional insured coverage, waiver of subrogation endorsement in favor of Contractor and its employees and the completed operations coverage, for a period of two (2) years after completion of the Project. Subcontractor’s insurance coverage **shall not** include any of the following endorsements, excluding or limiting coverage:

(i) Contractual Liability Limitation, CG 21 39;
(ii) Amendment of Insured Contract Definition, CG 24 26;
(iii) Exclusion-Explosion, Collapse and Underground Property Damage Hazard, CG 21 42 or CG 21 43;
(iv) Limitation of Coverage to Designated Premises or Project, CG 21 44 07 98;
(v) Exclusion-Damage to Work Performed by Subcontractors on Your Behalf, CG 22 94 or CG 22 95;
(vi) Any type of Construction Defect Completed Operations exclusion;
(vii) Any type of Punititive, Exemplary or Multiplied Damages exclusion; and/or
(viii) Any type of Habitational, Residential, or Condominium Exclusion.

c. The Workers’ Compensation Policy shall contain a waiver of subrogation endorsement in favor of Contractor and its employees. Subcontractor shall execute a joint agreement to be filed with the Workers’ Compensation Commission stating the Subcontractor is an independent contractor.

d. Prior to starting the Subcontract Work, the Subcontractor shall deliver to Contractor two original Accord Certificates of Insurance acceptable to Contractor which evidences the coverages and the endorsements required herein and which states that the coverages afforded under the policies will not be canceled or terminated unless at least 30 days written notice is given to the Contractor. A separate certificate of insurance will be provided for each such Subcontract. If Subcontractor subcontracts any portion of the Subcontract Work, Subcontractor shall deliver to Contractor for each of Subcontractor's subcontractors or employee leasing companies, an original Accord Certificate of Insurance which evidences the same coverages and endorsements for workers’ compensation insurance as required herein. All insurance companies providing coverage to Subcontractor pursuant to the requirements of this Agreement shall have a minimum Best’s Rating of A- and a Financial Size Category listing of no lower than VII, both as provided by A.M. Best Company, Inc. Upon request from Contractor, Subcontractor shall deliver a copy of all policies of insurance required herein.

e. Subcontractor shall be solely responsible for insuring Subcontractor’s equipment against physical loss or damage of any kind.

f. **SUBCONTRACTOR WAIVES ANY CLAIM AGAINST CONTRACTOR, OWNER OR THEIR EMPLOYEES AND OFFICERS, FOR ANY AND ALL LOSSES, INJURY, DAMAGES OR EXPENSES WHICH ARE COVERED BY POLICIES OF INSURANCE, EXCEPT SUCH RIGHTS AS SUBCONTRACTOR MAY HAVE TO THE PROCEEDS OF SUCH INSURANCE.**

Please have your insurance agent issue Buford-Thompson Company an original Accord Certificate of Insurance, documenting the above items as soon as possible before beginning work at the project. (A sample certificate of insurance is enclosed that you may forward to your agent). **This Certificate of Insurance (yours and your subcontractors) and a copy of the executed Subcontract Agreement must be in our business office before you may begin work at the jobsite.** Failure to comply may cause Buford-Thompson Company to cancel your Subcontract Agreement.

Enclosure
p:\new job forms 2013\insurance requirements\revised insurance memo 2-27-13.docx
### Certificate of Liability Insurance

**Date (MM/DD/YYYY)**

**This Certificate is Issued as a Matter of Information Only and Confers No Rights Upon the Certificate Holder. This Certificate Does Not Affirmatively or Negatively Amend, Extend, or Alter the Coverage Afforded by the Policies Below. This Certificate of Insurance Does Not Constitute a Contract Between the Issuing Insurer(s), Authorized Representative or Producer, and the Certificate Holder.**

**Important:** If the certificate holder is an Additional Insured, the policy(ies) must be endorsed. If Subrogation is Waived, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

**Producer**

**Your Insurance Company**

**Insured**

**Subcontractor Name**

**Insurer(s) Affording Coverage**

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<thead>
<tr>
<th>Insurer</th>
<th>NAIC #</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>19488</td>
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<tr>
<td>B</td>
<td>23396</td>
</tr>
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<td>C</td>
<td>19410</td>
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<td>D</td>
<td>22945</td>
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**Coverages Certificate Number:**

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<thead>
<tr>
<th>Type of Insurance</th>
<th>Policy Number</th>
<th>Policy Eff (MM/DD/YYYY)</th>
<th>Policy Exp (MM/DD/YYYY)</th>
<th>Limits</th>
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<tbody>
<tr>
<td>General Liability</td>
<td>Each Occurrence</td>
<td>$1,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Premises (Ex occurrence)</td>
<td>$50,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Med Exp (Any one person)</td>
<td>$5,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal &amp; Adv Injury</td>
<td>$1,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>General Aggregate</td>
<td>$2,000,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Products - Comp/Op Agg</td>
<td>$1,000,000</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Combined Single Limit (Ex accident)</td>
<td>$1,000,000 OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bodily Injury (Per person)</td>
<td>$500,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bodily Injury (Per accident)</td>
<td>$1,000,000</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Property Damage (Per accident)</td>
<td>$500,000</td>
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<tr>
<td></td>
<td>Bodily Illness</td>
<td>$1,000,000</td>
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<tr>
<td></td>
<td>Bodily Injury</td>
<td>$1,000,000</td>
<td></td>
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</tr>
</tbody>
</table>

**Description Operations/Locations/Vehicles (Attach ACORD 101, Additional Remarks Schedule, if more space is required)**

Buford-Thompson Company, L.L.C. is added as an Additional Insured per General Liability Endorsement Forms CG2010 10 01 (ongoing operations) and CG2037 10 01 (completed operations). Coverage is primary and non-contributing with that of Additional Insured’s for General Liability and Automobile Liability. Subrogation is waived against Buford-Thompson Co., L.L.C. for General Liability, Automobile Liability and Workers Compensation.

**Certificate Holder**

**Cancellation**

Should any of the above described policies be canceled before the expiration date thereof, notice will be delivered in accordance with the policy provisions.

**Authorized Representative**
SUBCONTRACTOR PAYMENT BOND

THE STATE OF TEXAS §
COUNTY OF TARRANT §

KNOW ALL MEN BY THESE PRESENTS THAT:

We, ________________________________ [SUBCONTRACTOR] (the “Principal”) and ________________________________ [SURETY] (the “Surety”), are held and firmly bound unto Buford-Thompson Company, LLC (the “Contractor”), a Texas limited partnership, in the sum of _____________________ Dollars ($                                  ).

WHEREAS, the Principal has entered into a subcontract agreement with Contractor dated _____________________[SUBCONTRACT DATE] (the “Subcontract”) to perform certain construction on the____________________________________ [PROJECT], a copy of which Subcontract is incorporated by reference and made a part of this agreement for all purposes.

NOW THEREFORE, the condition of this obligation is such that if the Principal shall (i) promptly pay all claims for labor performed, materials furnished or fabricated, or equipment rented or purchased, in relation to the Subcontract; (ii) defend, indemnify, hold the Contractor harmless from and against all losses and expenses for liens or claims on Contractor's bond (“bond claims”) arising out of such claims for labor, materials or equipment; and (iii) pay the Contractor on demand all sums it shall have paid to discharge any such lien or bond claim; then this obligation shall be void; otherwise, it shall remain in full force and effect.

Principal agrees to furnish the Contractor full and correct statements of the costs of labor and materials actually used in performing the Subcontract.

Principal and Surety jointly agree to defend, indemnify and hold the Contractor harmless against claims for labor performed or materials furnished in connection with the Subcontract and against all losses and expenses on account of liens or bond claims filed in connection therewith, and to pay to Contractor all sums it shall have paid to discharge such liens or bond claims or to defend against such liens or bond claims.

Surety and Principal further agree that any alterations which may be made in the terms of the Subcontract or in the work to be done thereunder, or the giving by the Contractor of any extension of time for the performance of the Subcontract, or Contractor’s payment or partial payment of any sums to Principal under the Subcontract, or any other forbearance on the part of either the Contractor or the Principal to the other, shall not in any way release the Surety, its administrators, successors or assigns, from their obligations or liability hereunder. Notice to the Surety of any such alteration, extension, forbearance or payment to Principal is hereby expressly waived by the Surety.
It is further agreed by the Surety and the Principal that this bond shall inure to the benefit of and may be directly sued upon by any person, firm, or corporation to recover for labor performed or material furnished under the Subcontract; and shall be construed to require the Surety and the Principal to pay direct to any person, firm, or corporation performing labor or furnishing material in connection with the Subcontract, any indebtedness for such labor or material.

IN TESTIMONY WHEREOF, the parties hereto have subscribed their names in __________ County, __________ State, this ____ day of _____________________, 201__.

[SUBCONTRACTOR]

Attest: ____________________________________________
Witness

_______________________________ (Seal)
Principal

[SURETY]

Attest: ____________________________________________
Witness

_______________________________ (Seal)
Surety
THE STATE OF TEXAS §
COUNTY OF TARRANT §

KNOW ALL MEN BY THESE PRESENTS THAT:

We, ______________________________ [SUBCONTRACTOR], (the “Principal”), and ______________________________ [SURETY] (the “Surety”), are held and firmly bound unto Buford-Thompson Company, LLC (the “Contractor”), a Texas limited partnership, in the sum of _________________________________ Dollars ($______________). [SUBCONTRACT AMOUNT] for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a subcontract agreement with Contractor dated ________________ [SUBCONTRACT DATE] (the “Subcontract”) to perform certain construction on the _____________________________ [PROJECT], a copy of which Subcontract is incorporated by reference and made a part of this agreement for all purposes.

NOW THEREFORE, the condition of this obligation is such that if the Principal (i) shall faithfully perform the Subcontract in every particular and without fraud, defalcation or delay; and (ii) shall satisfy all claims and demands related to the performance of the Subcontract, and (iii) shall fully indemnify and save harmless Contractor from all cost and damage which Contractor may suffer by reason of Principal’s failure to faithfully perform the Subcontract in every particular and (iv) shall fully reimburse and repay the Contractor all costs and expenses which the Contractor may incur in making good any such default, and (v) shall pay all costs, expenses and attorney’s fees which Contractor may incur in the defense of any suits arising out of the performance of the Subcontract or in the prosecution or defense of any suits arising out of the breach or default of Principal or Surety under the Subcontract or under this bond, then this obligation shall be null and void; otherwise, it shall remain in full force and effect.

Surety and Principal further agree that any alterations which may be made in the terms of the Subcontract or in the work to be done thereunder, or the giving by the Contractor of any extension of time for the performance of the Subcontract, or Contractor’s payment or partial payment of any sums to Principal under the Subcontract, or any other forbearance on the part of either the Contractor or the Principal to the other, shall not in any way release the Surety, its administrators, successors or assigns, from their obligations or liability hereunder. Notice to the Surety of any such alteration, extension, forbearance or payment to Principal is hereby expressly waived by the Surety.

The Surety further agrees that in the event of a breach of the Subcontract on the part of the Principal (as determined in the sole discretion of the Contractor), the Surety will, within seven (7) days after written notice of any such breach of the Subcontract mailed to the Surety by the Contractor, commence to timely and fully complete the Subcontract according to all the terms and
conditions of the Subcontract for the Subcontract amount, and in accordance with the Subcontract schedule and time for completion. If at the option of the Contractor, the Contractor elects to itself complete the Subcontract, employing such subcontractors and laborers, and furnishing such materials as the Contractor may in its sole discretion consider necessary for the completion of the Principal’s obligations under the Subcontract, the Surety will upon presentation of bills by the Contractor, immediately pay the same without contest, waiving all defenses which the Surety may have as Surety or which the Principal may have under the Subcontract.

IN TESTIMONY WHEREOF the parties hereto have subscribed their names in _____________ County, _____________ State, this ___ day of ____________________, 201__.  

[SUBCONTRACTOR]  
Attest: ___________________________  ________________________________(Seal)  
Witness  
Principal  

[SURETY]  
Attest: ___________________________  ________________________________(Seal)  
Witness  
Surety
SELECTION CRITERIA FOR EVALUATION OF PROPOSALS

Company Name ________________________________

Proposal Package ______________________________

1. Proposal Price – 50 points
   
   Score: ______________________

2. Reputation of the Proposer – 5 points
   
   Score: ______________________

3. Past relationship with the Owner – 5 points
   
   Score: ______________________

4. Past relationship with the Construction Manager – 5 points
   
   Score: ______________________

5. Current work load and available manpower – 5 points
   
   Score: ______________________

6. Current financial status and past credit history with vendors - 5 points
   
   Score: ______________________

7. Previous experience with similar size and scope projects - 15 points
   
   Score: ______________________

8. Safety program and safety record - 10 points
   
   Score: ______________________

   Total Score _________  Ranking _________
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<td>50 d</td>
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<td>59</td>
<td>MEP</td>
<td>MEP - Wall &amp; OH Trim Out</td>
<td>18 d</td>
<td>8/9/16</td>
<td>8/29/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>MEP</td>
<td>MEP - Startup Equipment</td>
<td>3 d</td>
<td>8/15/16</td>
<td>8/17/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>TA</td>
<td>Toilet Partitions &amp; Accessories</td>
<td>2 d</td>
<td>8/18/16</td>
<td>8/19/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>CONC</td>
<td>Concrete - Sidewalks &amp; Flatwork</td>
<td>6 d</td>
<td>8/18/16</td>
<td>8/24/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63</td>
<td>ELEVATOR</td>
<td>Elevator - Installation</td>
<td>20 d</td>
<td>8/18/16</td>
<td>9/9/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>EXCAV</td>
<td>Final Grading</td>
<td>2 d</td>
<td>8/25/16</td>
<td>8/26/16</td>
<td>0%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>65</td>
<td>ROOF</td>
<td>Roofing - Metal Trim &amp; Down Spouts</td>
<td>5 d</td>
<td>8/27/16</td>
<td>9/1/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>DRYWL</td>
<td>Ceiling - Drop Tiles</td>
<td>15 d</td>
<td>8/30/16</td>
<td>9/15/16</td>
<td>0%</td>
<td></td>
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<td></td>
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<td>67</td>
<td>SPCL</td>
<td>Studio Lighting Track System</td>
<td>6 d</td>
<td>9/8/16</td>
<td>9/14/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68</td>
<td>ELEVATOR</td>
<td>Elevator - State Inspection</td>
<td>7 d</td>
<td>9/10/16</td>
<td>9/17/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69</td>
<td>MISC</td>
<td>Misc. Specialties - MB, TB, FEC, PS, HB</td>
<td>2 d</td>
<td>9/16/16</td>
<td>9/17/16</td>
<td>0%</td>
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<td>70</td>
<td>MILL</td>
<td>Millwork</td>
<td>10 d</td>
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<td>9/27/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71</td>
<td>FLOORS</td>
<td>Flooring - VCT &amp; Carpet Tiles</td>
<td>10 d</td>
<td>9/28/16</td>
<td>10/8/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72</td>
<td>DOORS</td>
<td>Doors &amp; Hardware</td>
<td>6 d</td>
<td>10/10/16</td>
<td>10/15/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73</td>
<td>T&amp;B</td>
<td>Test &amp; Balance HVAC Systems</td>
<td>7 d</td>
<td>10/17/16</td>
<td>10/24/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74</td>
<td>FC</td>
<td>Final Clean</td>
<td>3 d</td>
<td>10/25/16</td>
<td>10/27/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75</td>
<td>PL</td>
<td>Punch List</td>
<td>4 d</td>
<td>10/28/16</td>
<td>11/1/16</td>
<td>0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Midwestern State University
Mass Communication
RFP #735-16-8144
Proposal Bid Form

PROPOSAL PACKAGE NO: ______________________

BID DATE, TIME AND LOCATION: November 3, 2015 at 2:00 PM. Submit to Director of Purchasing/Contract Management, Midwestern State University, Daniel Building, 3410 Taft, Wichita Falls, Texas or via email to Stephen Shelley stephen.shelley@mwsu.edu or fax to Stephen Shelley at 940-397-4530.

PROPOSAL OF: ______________________________________ (company name)

________________________________________ (company address)

________________________________________ (phone number)

________________________________________ (fax number)

________________________________________ (Bidders name - printed)

________________________________________ (email address)

○ A corporation organized and existing under the laws of the State of Texas

Or

○ A partnership consisting of __________________________________________

Or

○ A proprietorship __________________________ for ____________________

The undersigned, in compliance with the Advertisement for Bids, the Instruction to Bidders for the above referenced Proposal Package having examined the Construction Documents prepared by Rees Architects, Dallas, Texas including all documents making a complete Contract for this project, the proposal package as prepared by BTC and having examined the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the project, including the availability of labor, utilities and materials; hereby declares that he will pay not less than the specified prevailing wage rates, that he will furnish all the necessary bonds (if requested) and insurance, machinery, tools, apparatus, and other means of construction and will do the work and furnish all materials required of him within the time and in the manner prescribed, and for the prices stated herein.
The undersigned further declares that he understands the exact scope of the project and that he is willing to perform an increase in the work in accordance with the provisions of the Contract Documents.

The undersigned agrees to furnish all insurance required in the amounts specified, from an acceptable insurance provider and to furnish Performance and Payment Bonds, if required, equal to the amount of the Contract. Abatement Subcontractors will be required to provide additional Pollution Liability Insurance with a limit of $5,000,000 per project aggregate.

The undersigned agrees that contracts shall be awarded based on the best value to the Owner that complies with the conditions of the proposal package, based on the selection criteria of the Construction Manager. However, Buford-Thompson Company and/or Midwestern State University reserve the right to reject any and all proposals and to waive any informality in proposals received whenever any such rejection or waiver is in the interests of the Owner and Construction Manager. By submitting a proposal, each offerer agrees to waive any claim it has or may have against the Owner, Architect, Construction Manager and its employees arising out of or in connection with the administration, evaluation, or recommendation of any proposer, waiver of any requirements under the submission documents, acceptance or rejection of any submission and award of a subcontract. All proposers agree that the final selection, in accordance with the established selection criteria, is subjective and as such the Construction Manager and/or Owner will determine the recommendation for the selected subcontractor based on the information available and in the best interest of the Owner and the Construction Manager.

The undersigned agrees to provide the following insurance for any subcontractor proposing to perform asbestos abatement work in addition to the other requirements listed in Article VI of the Blanket Subcontract Agreement as part of the base bid. Pollution Liability Insurance with a $5 million limit naming Buford-Thompson Company as additional insured and a waiver of subrogation will be required in addition to the requirements listed in Article VI of the attached Subcontract Agreement.

**BASE BID: Do not include cash allowances – include material allowance and attic stock.**
Provide all labor, materials, equipment, etc. as shown on the Construction Documents and in accordance with the Contract Documents to complete the work for:

Proposal Package Number ____________________________, for the lump sum of:

$__________________________ Dollars, 

If required by the Construction Manager, Provide Payment and Performance Bonds for 100% of the base bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

$__________________________ Dollars, $__________________________
ALTERNATES:

Alternate No. 1: Add Studio Lighting Package

1. Provide the Studio Lighting Package as specified and shown on drawings.

Alternate Number ______ One (1) _____________, for the lump sum of:
ADD/DEDUCT (Circle which applies) – Insert the DIFFERENCE of the add or deduct on the line below

_______________________________________________________________ Dollars,

$_______________________________

PAYMENT AND PERFORMANCE BONDS:

If required by the Construction Manager, provide Payment and Performance Bonds for 100% of the alternate bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

_______________________________________________________________ Dollars, $_______________________________

Alternate No. 2: Add Wood Paneling

1. Provide wood paneling in the first floor gallery space.

Alternate Number ______ Two (2) _____________, for the lump sum of:
ADD/DEDUCT (Circle which applies) – Insert the DIFFERENCE of the add or deduct on the line below

_______________________________________________________________ Dollars,

$_______________________________

PAYMENT AND PERFORMANCE BONDS:

If required by the Construction Manager, provide Payment and Performance Bonds for 100% of the alternate bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

_______________________________________________________________ Dollars, $_______________________________
Alternate No. 3: Acoustical Wall Panels

1. Provide acoustical wall panels in Edit rooms.

Alternate Number Three (3) ________________, for the lump sum of:
ADD/DEDUCT (Circle which applies) – Insert the DIFFERENCE of the add or deduct on the line below

___________________________________________________________________________ Dollars,

$

PAYMENT AND PERFORMANCE BONDS:

If required by the Construction Manager, provide Payment and Performance Bonds for 100% of the alternate bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

___________________________________________________________________________ Dollars, $

Alternate No. 4: Cage Lockers

1. Provide cage lockers in the Camera Storage Room.

Alternate Number Four (4) __________, for the lump sum of:
ADD/DEDUCT (Circle which applies) – Insert the DIFFERENCE of the add or deduct on the line below

___________________________________________________________________________ Dollars,

$

PAYMENT AND PERFORMANCE BONDS:

If required by the Construction Manager, provide Payment and Performance Bonds for 100% of the alternate bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

___________________________________________________________________________ Dollars, $


Alternate No. 5: Alternate Manufacturer for Roof Top Units

1. Provide alternate manufacturer for roof top units.

Alternate Number Five (5), for the lump sum of:
ADD/DEDUCT (Circle which applies) – Insert the DIFFERENCE of the add or deduct on the line below

Dollars, $______________________________

PAYMENT AND PERFORMANCE BONDS:

If required by the Construction Manager, provide Payment and Performance Bonds for 100% of the alternate bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

Dollars, $______________________________

Alternate No. 6: Carpet

1. Provide carpet in main gallery space in lieu of floor tile.

Alternate Number Six (6), for the lump sum of:
ADD/DEDUCT (Circle which applies) – Insert the DIFFERENCE of the add or deduct on the line below

Dollars, $______________________________

PAYMENT AND PERFORMANCE BONDS:

If required by the Construction Manager, provide Payment and Performance Bonds for 100% of the alternate bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

Dollars, $______________________________
Alternate No. 7: EIFS


Alternate Number Seven (7), for the lump sum of:

ADD/DEDUCT (Circle which applies) – Insert the DIFFERENCE of the add or deduct on the line below

$__________________________ Dollars,

PAYMENT AND PERFORMANCE BONDS:

If required by the Construction Manager, provide Payment and Performance Bonds for 100% of the alternate bid contract amount in accordance with the requirements identified in the Construction Documents and Contract Documents for the lump sum of:

$__________________________ Dollars,

Documents Acknowledged:

Addendum No. _______ Date: __________   Addendum No. _______ Date: __________
Addendum No. _______ Date: __________   Addendum No. _______ Date: __________
Addendum No. _______ Date: __________   Addendum No. _______ Date: __________
Addendum No. _______ Date: __________   Addendum No. _______ Date: __________

Specific exclusions to the proposal package are listed on the attached sheet of exclusions, identified by the paragraph and item number. General exclusions attached to a proposal letter will not be considered.

Respectfully submitted,

_________________________________________ (Company Name)
_________________________________________ (Company Address)
_________________________________________ (Company Phone)
_________________________________________ (Company Fax)

By: ______________________________________ (Signature) Date: ________________

By: ______________________________________ (Printed)

Email address of person submitting proposal: ___________________________________________
Midwestern State University
Mass Communication
RFP#735-16-8144

Exclusions to Proposal Package:

1. 
2. 
3. 
4. 
5. 
6. 
7. 
8. 
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11. 
12. 
13. 
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18. 
19. 
20. 
21. 
22. 
23. 
24. 
25. 
PREVAILING WAGE RATE DETERMINATION

Midwestern State University has adopted the following Wage Scale indicating the wages to be paid for Journeyman including all fringe benefits. This Wage shall be paid to all the workers on the site of the Project. It does not apply to trades off the site of the actual construction project.

<table>
<thead>
<tr>
<th>BUILDING CONSTRUCTION TRADES</th>
<th>WAGE RATE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLASSIFICATION</strong></td>
<td></td>
</tr>
<tr>
<td>Asbestos Workers, Insulators</td>
<td>$11.05</td>
</tr>
<tr>
<td>Bricklayers, Stone Masons</td>
<td>$15.75</td>
</tr>
<tr>
<td>Carpenters</td>
<td>$12.50</td>
</tr>
<tr>
<td>Carpet Layers/Floor Installers</td>
<td>$11.00</td>
</tr>
<tr>
<td>Concrete Finishers</td>
<td>$12.25</td>
</tr>
<tr>
<td>Drywall Installers/Ceiling</td>
<td>$12.08</td>
</tr>
<tr>
<td>Electricians</td>
<td>$16.75</td>
</tr>
<tr>
<td>Elevator Mechanics</td>
<td>$18.75</td>
</tr>
<tr>
<td>Fire Alarm Technicians</td>
<td>$12.50</td>
</tr>
<tr>
<td>Light Equipment Operators</td>
<td>$10.50</td>
</tr>
<tr>
<td>Heavy Equipment Operators</td>
<td>$13.00</td>
</tr>
<tr>
<td>Glaziers</td>
<td>$11.50</td>
</tr>
<tr>
<td>Ironworkers</td>
<td>$13.60</td>
</tr>
<tr>
<td>Laborers</td>
<td>$ 8.00</td>
</tr>
<tr>
<td>Lathers</td>
<td>$15.25</td>
</tr>
<tr>
<td>Millwrights</td>
<td>$15.29</td>
</tr>
<tr>
<td>Painters, Wall Covering</td>
<td>$11.50</td>
</tr>
<tr>
<td>Pipe fitters</td>
<td>$17.75</td>
</tr>
<tr>
<td>Plasterers</td>
<td>$15.10</td>
</tr>
<tr>
<td>Plumbers</td>
<td>$17.79</td>
</tr>
<tr>
<td>Reinforcing Steel Setters</td>
<td>$10.50</td>
</tr>
<tr>
<td>Roofers</td>
<td>$10.50</td>
</tr>
<tr>
<td>Sheet Metal Workers</td>
<td>$17.55</td>
</tr>
<tr>
<td>Sprinkler Fitters</td>
<td>$17.25</td>
</tr>
<tr>
<td>Terrazzo Workers</td>
<td>$15.00</td>
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<tr>
<td>Tile Setters</td>
<td>$15.00</td>
</tr>
<tr>
<td>Waterproofers/Caulkers</td>
<td>$11.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CIVIL/HEAVY CONSTRUCTION TRADES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESCRIPTION</strong></td>
<td></td>
</tr>
<tr>
<td>Air Tool Person</td>
<td>$ 7.25</td>
</tr>
<tr>
<td>Asphalt Raker</td>
<td>$ 7.50</td>
</tr>
<tr>
<td>Batching Plant Scaleperson</td>
<td>$ 7.00</td>
</tr>
<tr>
<td>Concrete Finisher (Paving)</td>
<td>$ 7.60</td>
</tr>
<tr>
<td>Concrete Finisher (Structures)</td>
<td>$ 7.60</td>
</tr>
<tr>
<td>Form Builder (Structures)</td>
<td>$ 9.50</td>
</tr>
<tr>
<td>Form Setter (Paving and Curbs)</td>
<td>$ 9.00</td>
</tr>
<tr>
<td>Form Setter (Structures)</td>
<td>$ 9.00</td>
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<tr>
<td>Mechanic</td>
<td>$ 7.50</td>
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<tr>
<td>Oiler</td>
<td>$ 7.00</td>
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<tr>
<td>Serviceperson</td>
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</tr>
<tr>
<td>Pipelayer</td>
<td>$ 8.25</td>
</tr>
<tr>
<td>Welder</td>
<td>$13.90</td>
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# POWER EQUIPMENT OPERATORS

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<thead>
<tr>
<th>Equipment Description</th>
<th>Hourly Rate</th>
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</thead>
<tbody>
<tr>
<td>Asphalt Paving Machine</td>
<td>$9.00</td>
</tr>
<tr>
<td>Broom or Sweeper Operator</td>
<td>$7.00</td>
</tr>
<tr>
<td>Bulldozer, 150HP or less</td>
<td>$8.00</td>
</tr>
<tr>
<td>Crane, Clamshell, Shovel (less than 1-1/2 c.y.)</td>
<td>$8.00</td>
</tr>
<tr>
<td>Crane, Clamshell, Shovel, Backhoe Derrick, Dragline, Shovel (1-1/2 c.y.)</td>
<td>$8.25</td>
</tr>
<tr>
<td>Crusher and Screening Plant Operator</td>
<td>$7.00</td>
</tr>
<tr>
<td>Foundation Drill Operator (truck)</td>
<td>$8.50</td>
</tr>
<tr>
<td>Front End Loader (2-1/2 c.y)</td>
<td>$7.25</td>
</tr>
<tr>
<td>Motor Grade Operator, Fine grade</td>
<td>$10.00</td>
</tr>
<tr>
<td>Motor Grader Operator Flat Wheel or Tamping</td>
<td>$7.00</td>
</tr>
<tr>
<td>Roller, Steel Wheel (Plant-Mix Pavements)</td>
<td>$7.25</td>
</tr>
<tr>
<td>Roller, Steel Wheel (Flat Wheel or Tamping)</td>
<td>$7.25</td>
</tr>
<tr>
<td>Roller, Pneumatic (Self-Propelled)</td>
<td>$7.25</td>
</tr>
<tr>
<td>Scrapers (17 c.y. or less)</td>
<td>$7.25</td>
</tr>
<tr>
<td>Scrapers (over 17 c.y.)</td>
<td>$7.50</td>
</tr>
<tr>
<td>Tractor (Crawler Type over 150HP)</td>
<td>$7.00</td>
</tr>
<tr>
<td>Tractor (Pneumatic 80HP and less)</td>
<td>$7.00</td>
</tr>
<tr>
<td>Traveling Mixer</td>
<td>$7.00</td>
</tr>
<tr>
<td>Wagon Drill, Boring Machine, Post Hole Digger</td>
<td>$7.00</td>
</tr>
<tr>
<td>Truck Driver</td>
<td>$7.75</td>
</tr>
<tr>
<td>Cable Splicer</td>
<td>$9.00</td>
</tr>
<tr>
<td>Lineman</td>
<td>$10.75</td>
</tr>
<tr>
<td>Groundperson</td>
<td>$7.00</td>
</tr>
</tbody>
</table>
PART 1 GENERAL

1.01 PROJECT

A. Project Name: Mass Communication Addition
   Midwestern State University

B. Owner's Name: Midwestern State University
   3410 Taft Blvd.
   Wichita Falls, TX 76308

C. Architect's Name: REES Architecture.
   1025 N. Stemmons Freeway, Suite 737
   Dallas, Texas 75207

D. The Project consists of the following:
   1. The project is a 2 story structure of approximately 14,657 square feet. It will be constructed
      adjacent to the existing Fain Fine Arts building. The building will include offices, open
      newsroom, edit rooms, storage spaces, photo space, restrooms, commons area,
      circulation and an elevator.

1.02 CONTRACT DESCRIPTION

A. Contract Type: A single prime contract based on a Stipulated Price as described in Document
   00 5200 - Agreement Form.

1.03 DESCRIPTION OF ALTERATIONS WORK

A. Scope of demolition and removal work is shown on drawings and specified in Section 02 4100.
B. Plumbing: Alter existing system and add new construction, keeping existing in operation.
C. HVAC: Alter existing system and add new construction, keeping existing in operation.
D. Electrical Power and Lighting: Alter existing system and add new construction, keeping existing
   in operation.
E. Fire Suppression Sprinklers: Alter existing system and add new construction, keeping existing
   in operation.
F. Fire Alarm: Alter existing system and add new construction, keeping existing in operation.
G. Telephone: Alter existing system and add new construction, keeping existing in operation.
H. Security System: Alter existing system and add new construction, keeping existing in operation.

1.04 WORK BY OWNER

A. Items noted NIC (Not in Contract) will be supplied and installed by Owner before Substantial
   Completion. Some items include:
   1. Furniture.
   2. Broadcast Studio equipment.

1.05 OWNER OCCUPANCY

A. Owner intends to continue to occupy adjacent portions of the existing building during the entire
   construction period.
B. Owner intends to occupy the Project upon Substantial Completion.
C. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
D. Schedule the Work to accommodate Owner occupancy.
1.06 CONTRACTOR USE OF SITE AND PREMISES

A. Construction Operations: Limited to areas noted on Drawings.

B. Arrange use of site and premises to allow:
   1. Owner occupancy.
   2. Work by Others.
   3. Work by Owner.
   4. Use of site and premises by the public as determined by Midwestern State University authorities.

C. Provide access to and from site as required by law and by Owner:
   1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
   2. Do not obstruct roadways, sidewalks, or other public ways without permit.

D. Existing building spaces may not be used for storage.

E. Time Restrictions:
   1. Limit conduct of especially noisy exterior work to the classroom hours of 8:00 am to 5:00 pm.
   2. Coordination with Owner: Coordinate work that would disrupt adjacent building utility services. Comply with work hours provided by Owner for disruption of utilities.
   3. Owner reserves the right to alter Work scheduling to minimize disruptions to classroom instruction.

F. Utility Outages and Shutdown:
   1. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Owner and authorities having jurisdiction.
   2. Prevent accidental disruption of utility services to other facilities.

1.07 SPECIFICATION SECTIONS APPLICABLE TO ALL CONTRACTS

A. Unless otherwise noted, all provisions of the sections listed below apply to all contracts. Specific items of work listed under individual contract descriptions constitute exceptions.

B. Section 01 2000 - Price and Payment Procedures.

C. Section 01 2100 - Allowances.

D. Section 01 2200 - Unit Prices.

E. Section 01 2300 - Alternates.

F. Section 01 3000 - Administrative Requirements.

G. Section 01 3216 - Construction Progress Schedule.

H. Section 01 4000 - Quality Requirements.

I. Section 01 5000 - Temporary Facilities and Controls.

J. Section 01 6000 - Product Requirements.

K. Section 01 7000 - Execution and Closeout Requirements.

L. Section 01 7800 - Closeout Submittals.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Procedures for preparation and submittal of applications for progress payments.
   B. Documentation of changes in Contract Sum and Contract Time.
   C. Change procedures.
   D. Correlation of Contractor submittals based on changes.
   E. Procedures for preparation and submittal of application for final payment.

1.02 RELATED REQUIREMENTS
   A. Section 00 5000 - Contracting Forms and Supplements: Forms to be used.
   B. Document 00 7200 - General Conditions and Document 00 7300 - Supplementary Conditions: Additional requirements for progress payments, final payment, changes in the Work.
   C. Section 01 2100 - Allowances: Payment procedures relating to allowances.
   D. Section 01 2200 - Unit Prices: Monetary values of unit prices, payment and modification procedures relating to unit prices.
   E. Uniform General Conditions For Construction Contracts – State of Texas.

1.03 SCHEDULE OF VALUES
   A. Electronic media printout including equivalent information will be considered in lieu of standard form specified; submit draft to Architect for approval.
   B. Forms filled out by hand will not be accepted.
   C. Submit Schedule of Values in duplicate within 15 days after date of Owner-Contractor Agreement.
   D. Format: Utilize the Table of Contents of this Project Manual. Identify each line item with number and title of the specification Section. Identify site mobilization and bonds and insurance.
   E. Include in each line item, the amount of Allowances specified in this section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
   F. Include separately from each line item, a direct proportional amount of Contractor's overhead and profit.
   G. Revise schedule to list approved Change Orders, with each Application For Payment.

1.04 APPLICATIONS FOR PROGRESS PAYMENTS
   A. Submit required documents in electronic format.
   B. Payment Period: Submit at intervals stipulated in the Agreement.
   C. Forms filled out by hand will not be accepted.
   D. For each item, provide a column for listing each of the following:
      1. Item Number.
      2. Description of work.
      4. Previous Applications.
      5. Work in Place and Stored Materials under this Application.
      6. Authorized Change Orders.
      7. Total Completed and Stored to Date of Application.
      8. Percentage of Completion.
10. Retainage.

E. Execute certification by signature of authorized officer.

F. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored products.

G. List each authorized Change Order as a separate line item, listing Change Order number and dollar amount as for an original item of Work.

H. Submit electronic copies of each Application for Payment.

I. Include electronic copies of the following with the application:
   1. Transmittal letter as specified for Submittals in Section 01 3000.
   2. Construction progress schedule, revised and current as specified in Section 01 3000.
   3. Current construction photographs specified in Section 01 3000.
   4. Partial release of liens from major Subcontractors and vendors.
   5. Project record documents as specified in Section 01 7800, for review by Owner which will be returned to the Contractor.
   6. Affidavits attesting to off-site stored products.

J. When Architect requires substantiating information, submit electronic data justifying dollar amounts in question. Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.

1.05 MODIFICATION PROCEDURES

A. For minor changes not involving an adjustment to the Contract Sum or Contract Time, Architect will issue instructions directly to Contractor.

B. For other required changes, Architect will issue a document signed by Owner instructing Contractor to proceed with the change, for subsequent inclusion in a Change Order.
   1. The document will describe the required changes and will designate method of determining any change in Contract Sum or Contract Time.
   2. Promptly execute the change.

C. For changes for which advance pricing is desired, Architect will issue a document that includes a detailed description of a proposed change with supplementary or revised drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor shall prepare and submit a fixed price quotation within ____ days.

D. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Document any requested substitutions in accordance with Section 01 6000.

E. Computation of Change in Contract Amount: As specified in the Agreement and Conditions of the Contract.
   1. For change requested by Architect for work falling under a fixed price contract, the amount will be based on Contractor's price quotation.
   2. For change requested by Contractor, the amount will be based on the Contractor's request for a Change Order as approved by Architect.
   3. For pre-determined unit prices and quantities, the amount will based on the fixed unit prices.
   4. For change ordered by Architect without a quotation from Contractor, the amount will be determined by Architect based on the Contractor's substantiation of costs as specified for Time and Material work.

F. Substantiation of Costs: Provide full information required for evaluation.
   1. On request, provide the following data:
      a. Quantities of products, labor, and equipment.
      b. Taxes, insurance, and bonds.
c. Overhead and profit.
d. Justification for any change in Contract Time.
e. Credit for deletions from Contract, similarly documented.

2. Support each claim for additional costs with additional information:
   a. Origin and date of claim.
   b. Dates and times work was performed, and by whom.
   c. Time records and wage rates paid.
   d. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

3. For Time and Material work, submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.

G. Execution of Change Orders: Architect will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

H. After execution of Change Order, promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum.

I. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.

J. Promptly enter changes in Project Record Documents.

1.06 APPLICATION FOR FINAL PAYMENT

A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.

B. Application for Final Payment will not be considered until the following have been accomplished:
   1. All closeout procedures specified in Section 01 7000.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01 2100

ALLOWANCES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cost allowances.
B. Payment and modification procedures relating to allowances.

1.02 RELATED SECTIONS

A. Section 01 2000 - Price and Payment Procedures: Additional payment and modification procedures.

1.03 CASH ALLOWANCES

A. Costs Included in Allowances:
   1. Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site, less applicable taxes.
   2. Product delivery to site and handling at the site, including unloading, uncrating, and storage.
   3. Protection of products from elements and from damage; and labor for installation and finishing.

B. Architect Responsibilities:
   1. Consult with Contractor for consideration and selection of products, suppliers, and installers.
   2. Select products in consultation with Owner and transmit decision to Contractor.
   3. Prepare Change Order.

C. Contractor Responsibilities:
   2. Obtain proposals from suppliers and installers and offer recommendations.
   3. On notification of which products have been selected, execute purchase agreement with designated supplier and installer.
   4. Arrange for and process shop drawings, product data, and samples. Arrange for delivery.
   5. Promptly inspect products upon delivery for completeness, damage, and defects. Submit claims for transportation damage.

D. Differences in costs will be adjusted by Change Order.

1.04 ALLOWANCES SCHEDULE

A. Allowance No. 1: Allow $5,000 for purchase, shipping and installation of exterior signage. Signage to consist of individual brass letters, applied to the exterior envelope of the building. Allowance represents a total cost to Owner, including all contractor mark-ups.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01 2300

ALTERNATIVES

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Alternative submission procedures.
   B. Documentation of changes to Contract Sum and Contract Time.

1.02 RELATED SECTIONS
   A. Document 00 5000 - Agreement: Incorporating monetary value of accepted alternatives.

1.03 ACCEPTANCE OF ALTERNATIVES
   A. Alternatives quoted on Bid Forms will be reviewed and accepted or rejected at Owner’s option. Accepted alternatives will be identified in the Owner-Contractor Agreement.
   B. Coordinate related work and modify surrounding work to integrate the Work of each alternative.

1.04 SCHEDULE OF ALTERNATIVES
   A. Alternate Number 1 – Add Studio Lighting Package.
   B. Alternate Number 2 – Add Wood paneling in the first floor gallery space.
   C. Alternate Number 3 – Add Acoustical wall panels in Edit rooms.
   D. Alternate Number 4 – Add Cage lockers in the Camera Storage Room.
   E. Alternate Number 5 - Manufacturer for Roof Top Air Handling Units.
   F. Alternate Number 6 - Provide carpet in the main gallery space in lieu of floor tile.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01 3000

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Electronic document submittal service.
B. Preconstruction meeting.
C. Site mobilization meeting.
D. Progress meetings.
E. Construction progress schedule.
F. Progress photographs.
G. Coordination drawings.
H. Submittals for review, information, and project closeout.
I. Number of copies of submittals.
J. Submittal procedures.

1.02 RELATED REQUIREMENTS
A. Section 01 7800 - Closeout Submittals: Project record documents.

1.03 PROJECT COORDINATION
A. Project Coordinator: As designated by Midwestern State University.
B. Cooperate with the Project Coordinator in allocation of mobilization areas of site; for field offices and sheds, for facility access, traffic, and parking facilities.
C. During construction, coordinate use of site and facilities through the Project Coordinator.
D. Comply with Project Coordinator's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
E. Comply with instructions of the Project Coordinator for use of temporary utilities and construction facilities.
F. Coordinate field engineering and layout work under instructions of the Project Coordinator.
G. Make the following types of submittals to Architect through the Project Coordinator:
   1. Requests for interpretation.
   2. Requests for substitution.
   3. Shop drawings, product data, and samples.
   4. Test and inspection reports.
   5. Design data.
   6. Manufacturer's instructions and field reports.
   7. Applications for payment and change order requests.
   8. Progress schedules.
   9. Coordination drawings.
   10. Correction Punch List and Final Correction Punch List for Substantial Completion.
   11. Closeout submittals.

PART 2 PRODUCTS - NOT USED
PART 3 EXECUTION

3.01 PRECONSTRUCTION MEETING

A. Owner will schedule a meeting after Notice of Award.

B. Attendance Required:
   1. Owner.
   3. Contractor.
   4. Major Subcontractors.
   5. Contractor's Superintendent.

C. Agenda:
   1. Execution of Owner-Contractor Agreement.
   2. Submission of executed bonds and insurance certificates.
   4. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
   5. Designation of personnel representing the parties to the Contract.
   6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
   7. Scheduling.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.02 SITE MOBILIZATION MEETING

A. Owner will schedule a meeting at the Project site prior to Contractor occupancy.

B. Attendance Required:
   1. Contractor.
   2. Owner.
   3. Architect.
   4. Contractor's Superintendent.
   5. Major Subcontractors.

C. Agenda:
   1. Use of premises by Owner and Contractor.
   2. Owner's requirements and occupancy prior to completion.
   3. Construction facilities and controls provided by Owner.
   4. Temporary utilities provided by Owner.
   5. Survey and building layout.
   7. Schedules.
   8. Application for payment procedures.
   9. Procedures for testing.
   11. Requirements for start-up of equipment.
   12. Inspection and acceptance of equipment put into service during construction period.

D. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum monthly intervals.

B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
C. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, as appropriate to agenda topics for each meeting.

D. Agenda:
   1. Review minutes of previous meetings.
   2. Review of Work progress.
   3. Field observations, problems, and decisions.
   4. Identification of problems that impede, or will impede, planned progress.
   5. Review of submittals schedule and status of submittals.
   6. Maintenance of progress schedule.
   7. Corrective measures to regain projected schedules.
   8. Planned progress during succeeding work period.
   10. Effect of proposed changes on progress schedule and coordination.
   11. Other business relating to Work.

E. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.

3.04 CONSTRUCTION PROGRESS SCHEDULE

A. Within 10 days after date of the Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.

B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.

C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
   1. Include written certification that major contractors have reviewed and accepted proposed schedule.

D. Within 10 days after joint review, submit complete schedule.

E. Submit updated schedule with each Application for Payment.

3.05 PROGRESS PHOTOGRAPHS

A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.

B. Photography Type: Digital; electronic files.

C. Provide photographs of site and construction throughout progress of Work.

D. In addition to periodic, recurring views, take photographs of each of the following events:
   1. Completion of site clearing.
   2. Excavations in progress.
   3. Foundations in progress and upon completion.
   4. Structural framing in progress and upon completion.
   5. Enclosure of building, upon completion.
   6. Final completion, minimum of ten (10) photos.

E. Views:
   1. Provide non-aerial photographs from four cardinal views at each specified time, until Date of Substantial Completion.
   2. Consult with Architect for instructions on views required.
   3. Provide factual presentation.
   4. Provide correct exposure and focus, high resolution and sharpness, maximum depth of field, and minimum distortion.

F. Digital Photographs: 24 bit color, minimum resolution of 1024 by 768, in JPG format; provide files unaltered by photo editing software.
   1. Delivery Medium: Via email with project record photo CD.
   2. File Naming: Include project identification, date and time of view, and view identification.
3. PDF File: Assemble all photos into printable pages in PDF format, with 2 to 3 photos per page, each photo labeled with file name; one PDF file per submittal.
4. Photo CD(s): Provide 1 copy including all photos cumulative to date and PDF file(s), with files organized in separate folders by submittal date.

3.06 COORDINATION DRAWINGS
A. Provide information required by Project Coordinator for preparation of coordination drawings.
B. Review drawings prior to submission to Architect.

3.07 SUBMITTALS FOR REVIEW
A. When the following are specified in individual sections, submit them for review:
   1. Product data.
   2. Shop drawings.
   3. Samples for selection.
   4. Samples for verification.
   5. Substitution Request Forms.
B. Submit to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
C. Samples will be reviewed only for aesthetic, color, or finish selection.
D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 78 00 - CLOSEOUT SUBMITTALS.

3.08 SUBMITTALS FOR INFORMATION
A. When the following are specified in individual sections, submit them for information:
   1. Design data.
   2. Certificates.
   3. Test reports.
   4. Inspection reports.
   5. Manufacturer's instructions.
   6. Manufacturer's field reports.
   7. Substitution Request Forms.
   8. Other types indicated.
B. Submit for Architect's knowledge as contract administrator or for Owner.

3.09 SUBMITTALS FOR PROJECT CLOSEOUT
A. When the following are specified in individual sections, submit them at project closeout:
   1. Project record documents.
   2. Operation and maintenance data.
   3. Warranties.
   5. Substitution Request Forms.
   6. Other types as indicated.
B. Submit for Owner's benefit during and after project completion.

3.10 NUMBER OF COPIES OF SUBMITTALS
A. Documents for Review:
   1. Small Size Sheets, Not Larger Than 8-1/2 x 11 inches: Submit the number of copies which the Contractor requires, plus one copy for the Owner, plus one copy which will be retained by the Architect.
   2. Larger Sheets, Not Larger Than 36 x 48 inches: Submit one reproducible transparency and two opaque reproductions.
B. Documents for Information: Submit two copies.
C. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.
D. Samples: Submit the number specified in individual specification sections; one of which will be retained by Architect.
   1. After review, produce duplicates.
   2. Retained samples will not be returned to Contractor unless specifically stated.

3.11 SUBMITTAL PROCEDURES
A. Transmit each submittal with AIA Form G810.
B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
E. Deliver submittals to Architect at the Architect's business address.
F. Schedule submittals to expedite the Project, and coordinate submission of related items.
G. For each submittal for review, allow 15 calendar days excluding delivery time to and from the Contractor.
H. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
I. Provide space for Contractor and Architect review stamps.
J. When revised for resubmission, identify all changes made since previous submission.
K. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
L. Submittals not requested will not be recognized or processed.

END OF SECTION
SECTION 01 31 00
REQUESTS FOR INTERPRETATION

PART 1  GENERAL

1.01  SECTION INCLUDES

A.  Definitions.
B.  Procedure for submittals requesting interpretation.
C.  Number of copies of submittals.
D.  Submittal procedures.

1.02  RELATED SECTIONS

A.  Section 00 70 00 – General Conditions.
B.  Section 01 30 00 - Administrative Requirements: Additional administrative requirements.
C.  Section 01 78 00 - Closeout Submittals: Project record documents.

1.03  DEFINITIONS

A.  Requests for Interpretation: A request from the contractor or one of its subcontractors, to the owner, seeking an interpretation or a clarification of some requirement of the contract documents. The contractor shall clearly and concisely set forth the issue for which it seeks clarification or interpretation and why a response is needed from the owner. The contractor shall, in the written request, set forth its interpretation or understanding of the contracts requirements along with reasons why it has reached such an understanding.

B.  Drawing/Plan Clarification: An answer from the Architect, in response to an inquiry from the contractor, intended to make some requirement(s) of the drawings or plans clearly understood. Drawing/plan clarifications may be sketches, drawings, or in narrative form and will not change any requirements of the drawings or plans.

C.  Project Communications: Routine written communications between the Architect and the contractor shall be in letter, field memo, email or fax format. Such communications shall not be identified as Requests for Information nor shall they substitute for any other written requirement pursuant to the provisions of these contract documents.

1.04  REQUESTS FOR INTERPRETATION

A.  In the event that the contractor or subcontractor, at any tier, determines that some portion of the drawings, specifications, or other contract documents requires clarification or interpretation by the owner, the contractor shall submit a Request for Interpretation in writing to the Architect. Requests for Information may only be submitted by the contractor and shall only be submitted on the Request for Interpretation Forms approved by the Architect. The contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed from the Architect. In the Request for Interpretation, the contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

C.  The Architect will review all Requests for Interpretation to determine whether they are Requests for Interpretation within the meaning of this term. If the Architect determines that the document is not a Request for Interpretation, it will be returned to the contractor, un-reviewed as to content, for resubmittal on the proper form and in the proper manner. If the Architect determines the Owner requires comment, the request will be reviewed with Owner and returned to the Contractor.
D. Responses to Requests for Interpretation shall be issued within ten (10) working days of receipt of the request from the contractor unless the Owner determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Owner, the Owner will, within ten (10) working days of receipt of the request, notify the contractor of the anticipated response time. If the contractor submits a Request for Interpretation on an activity with ten (10) working days or less of float on the current project schedule, the contractor shall not be entitled to any time extension due to the time it takes the Architect to respond to the request, provided that the owner responds within the ten (10) working days set forth above.

E. Responses from the Architect will not change any requirement of the contract documents. In the event the contractor believes that a response to a Request for Interpretation will cause a change to the requirements of the contract document, the contractor shall immediately give written notice to the Architect stating that the contractor considers the response to be a Change Order. Failure to give such written notice immediately shall waive the contractor’s right to seek additional time or cost under the Changes article of these General Conditions.

1. Contractor will have 10 calendar days to submit a full price change to the Owner and Architect - following Architect response. If a price is not submitted within 10 calendar days, the Contractor forfeits any rights to Additional Change in scope prices or time.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 REQUESTS FOR INTERPRETATION

A. Where interpretation of Contract Documents is required, submit to Architect for review for the limited purpose of providing clarification of information given and the design concept expressed in the contract documents.

3.03 NUMBER OF COPIES OF SUBMITTALS

A. Provide one hard copy of all RFIs and support documentation to Architect with Close Out Documentation. Provide all parts to responses in consecutive order, with attachments clearly labeled with RFI numbers in 8 ½ x 11 inch format in 3-ring binder, clearly printed label on spine.

3.04 SUBMITTAL PROCEDURES

A. Create RFI on paper based system. Create transmittal for review and send email to Owner, Architect and all interested parties notifying intent of RFI.

B. Sequentially number the transmittal form. Include a brief worded description to summarize the subject of the submittal.

C. Post the RFI in the tab marked for RFIs and place RFI in log on web based system.

D. Schedule RFI submittals to expedite the Project, and coordinate submission of related RFI items.

E. For each RFI submittal for review, allow 15 calendar days review time.

F. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.

G. Submittals deemed to be a submittal that does not qualify as a Request For Interpretation it will be returned.

END OF SECTION
SECTION 01 3250
CONSTRUCTION PROGRESS SCHEDULE

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Preliminary schedule.
   B. Construction progress schedule, with network analysis diagrams and reports.

1.02 RELATED SECTIONS
   A. Section 01 1000 - Summary: Work sequence.

1.03 REFERENCES
   A. AGC (CPSM) - Construction Planning and Scheduling Manual; Associated General Contractors of America; 2004.

1.04 SUBMITTALS
   A. Within 10 days after date of Agreement, submit preliminary schedule defining planned operations for the first 60 days of Work, with a general outline for remainder of Work.
   B. If preliminary schedule requires revision after review, submit revised schedule within 10 days.
   C. Within 20 days after review of preliminary schedule, submit draft of proposed complete schedule for review.
      1. Include written certification that major contractors have reviewed and accepted proposed schedule.
   D. Within 10 days after review of the preliminary schedule, submit complete schedule.
   E. Submit updated schedule with each Application for Payment in electronic format.

1.05 SCHEDULE FORMAT
   A. Listings: In chronological order according to the start date for each activity. Identify each activity with the applicable specification section number.
   B. Diagram Sheet Size: 30 x 42 inches.
   C. Sheet Size: Multiples of 8-1/2 x 11 inches.
   D. Scale and Spacing: To allow for notations and revisions.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION
3.01 PRELIMINARY SCHEDULE
   A. Prepare preliminary schedule in the form of a preliminary network diagram.

3.02 CONTENT
   A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
   B. Identify each item by specification section number.
   C. Provide sub-schedules for each stage of Work identified in Section 01 10 00.
D. Provide sub-schedules to define critical portions of the entire schedule.

E. Include conferences and meetings in schedule.

F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month. This must be keyed exactly to schedule of values and Application for Payment forms. Owner will not make interpretations of items listed. Each must be matching for review purposes.

G. Provide separate schedule of submittal dates for shop drawings, product data, and samples, owner-furnished products, Products identified under Allowances, and dates reviewed submittals will be required from Architect. Indicate decision dates for selection of finishes.

H. Indicate delivery dates for owner-furnished products.

I. Provide legend for symbols and abbreviations used.

3.03 NETWORK ANALYSIS

A. Prepare network analysis diagrams and supporting mathematical analyses using the Critical Path Method. Use of Microsoft Project for scheduling is acceptable.

B. Illustrate order and interdependence of activities and sequence of work. Indicate how start of a given activity depends on completion of preceding activities, and how completion of the activity may restrain start of subsequent activities.

C. Mathematical Analysis: Tabulate each activity of detailed network diagrams, using calendar dates, and identify for each activity:
   1. Preceding and following event numbers.
   2. Activity description.
   3. Estimated duration of activity, in maximum 15 day intervals.
   4. Earliest start date.
   5. Earliest finish date.
   6. Actual start date.
   7. Actual finish date.
   8. Latest start date.
   9. Latest finish date.
   10. Total and free float; float time shall accrue to Owner and to Owner's benefit.
   11. Monetary value of activity, keyed to Schedule of Values.
   12. Percentage of activity completed.

D. Analysis Program: Capable of compiling monetary value of completed and partially completed activities, accepting revised completion dates, and recomputation of all dates and float.

E. Required Reports: List activities in sorts or groups:
   1. By preceding work item or event number from lowest to highest.
   2. By amount of float, then in order of early start.
   3. In order of latest allowable start dates.
   4. Listing of activities on the critical path.

3.04 REVIEW AND EVALUATION OF SCHEDULE

A. Participate in joint review and evaluation of schedule with Architect at each submittal.

B. Evaluate project status to determine work behind schedule and work ahead of schedule.

C. After review, revise as necessary as result of review, and resubmit within 10 days.

3.05 UPDATING SCHEDULE

A. Maintain schedules to record actual start and finish dates of completed activities.
B. Indicate progress of each activity to date of revision, with projected completion date of each activity.

C. Annotate diagrams to graphically depict current status of Work.

D. Identify activities modified since previous submittal, major changes in Work, and other identifiable changes.

E. Indicate changes required to maintain Date of Final Completion.

F. Submit reports required to support recommended changes.

G. Provide narrative report to define problem areas, anticipated delays, and impact on the schedule. Report corrective action taken or proposed and its effect including the effects of changes on schedules of separate contractors.

3.06 DISTRIBUTION OF SCHEDULE

A. Distribute electronic copies of updated schedules to Contractor's project site file, to Subcontractors, suppliers, Architect and Owner.

B. Instruct recipients to promptly report, in writing, problems anticipated by projections shown in schedules.

END OF SECTION
SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. References and standards.
B. Quality assurance submittals.
C. Mock-ups.
D. Control of installation.
E. Tolerances.
F. Testing and inspection services.
G. Manufacturers' field services.

1.02 RELATED SECTIONS

A. General Conditions: Submittal dates for applications for payment.
B. Section 01 3000 - Administrative Requirements: Submittal procedures.
C. Section 01 6000 - Product Requirements: Requirements for material and product quality.

1.03 SUBMITTALS

A. Testing Agency Qualifications:
   1. Prior to start of Work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
   2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.

B. Design Data: Submit for Architect's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

C. Test Reports: After each test/inspection, promptly submit copies of report to Architect and to Contractor.
   1. Include:
      a. Date issued.
      b. Project title and number.
      c. Name of inspector.
      d. Date and time of sampling or inspection.
      e. Identification of product and specifications section.
      f. Location in the Project.
      g. Type of test/inspection.
      h. Date of test/inspection.
      i. Results of test/inspection.
      j. Conformance with Contract Documents.
      k. When requested by Architect, provide interpretation of results.
   2. Test reports are submitted for Architect's knowledge as contract administrator or for the Owner, for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
3. The following text will be listed in specification sections requiring manufacturer field inspection services.
   a. General Contractor is to arrange for manufacturer inspection to generate field report documenting acceptable practices for this scope of work. Generated field report to be posted on web based file sharing system.

4. General Contractor is coordinate these services and is financially responsible for costs of all inspections through final acceptance.

D. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
   1. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
   2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.

E. Manufacturer's Instructions: When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, for the Owner's information. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

F. Manufacturer's Field Reports: Submit reports for Architect's benefit as contract administrator.
   1. Submit report in duplicate within 30 days of observation to Architect for information.
   2. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

G. Erection Drawings: Submit drawings for Architect's benefit as contract administrator.
   1. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
   2. Data indicating inappropriate or unacceptable Work may be subject to action by Architect or Owner.

1.04 REFERENCES AND STANDARDS

A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.

C. Obtain copies of standards where required by product specification sections. Store copies of all reference standards in project office for project duration. Examples of these standards are listed in the References section of the specifications section. For example, 9 ASTM guidelines may be listed for a spec section, so a copy of each must be present on site. Payment Applications will not be processed until this information is provided on site, in full.

D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion. All current submittals must be stored on site in a clear and organized manner. Failure to comply with this requirement will result in non-review of Application for Payment.

E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from the Contract Documents by mention or inference otherwise in any reference document.
1.05 TESTING AND INSPECTION AGENCIES

A. Contractor will employ and pay for services of an independent testing agency to perform specified testing.

B. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.01 CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with manufacturers’ instructions, including each step in sequence.

C. Should manufacturers’ instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Have Work performed by persons qualified to produce required and specified quality.

F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.

G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.

3.02 MOCK-UPS

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mock-ups shall be a comparison standard for the remaining Work.

D. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

3.03 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' tolerances. Should manufacturers’ tolerances conflict with Contract Documents, request clarification from Architect before proceeding.

C. Adjust products to appropriate dimensions; position before securing products in place.

3.04 TESTING AND INSPECTION

A. Testing Agency Duties:
   1. Test samples of mixes submitted by Contractor.
   3. Perform specified sampling and testing of products in accordance with specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Architect and Contractor of observed irregularities or non-conformance of Work or products.
6. Perform additional tests and inspections required by Architect.
7. Attend preconstruction meetings and progress meetings when the meeting agenda is relevant to information provided by the testing agency.
8. Submit reports of all tests/inspections specified.

C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.

D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel, and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
   a. To provide access to Work to be tested/inspected.
   b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
   c. To facilitate tests/inspections.
   d. To provide storage and curing of test samples.
4. Notify Architect and laboratory 24 hours prior to expected time for operations requiring testing/inspection services.
5. Employ services of an independent qualified testing laboratory and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
6. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.

E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency on instructions by Architect. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum.

3.05 MANUFACTURERS' FIELD SERVICES
A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.

B. Submit qualifications of observer to Architect 30 days in advance of required observations.
   1. Observer subject to approval of Architect.

C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

3.06 DEFECT ASSESSMENT
A. Replace Work or portions of the Work not conforming to specified requirements.
B. If, in the opinion of Architect, it is not practical to remove and replace the Work, Architect will direct an appropriate remedy or adjust payment.

END OF SECTION
SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES
   A. Temporary utilities.
   B. Temporary telecommunications services.
   C. Temporary sanitary facilities.
   D. Temporary Controls: Barriers, enclosures, and fencing.
   E. Security requirements.
   F. Vehicular access and parking.
   G. Waste removal facilities and services.
   H. Project identification sign.
   I. Field offices.

1.02 TEMPORARY UTILITIES
   A. Contractor will utilize Owner utilities. Contractor to pay for connections required to utilize the utilities.
      1. Contractor to connect to Owner’s existing electrical power, consisting of making electrical service available to Contractor.
      2. Contractor to connect to Owner’s existing water supply, consisting of making water service available to Contractor.
         a. For site related development, coordinate installation of municipal water meter with the Owner and the appropriate municipal authorities.
   B. Owner will pay monthly amounts for all electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
   C. Use trigger-operated nozzles for water hoses, to avoid waste of water.

1.03 TELECOMMUNICATIONS SERVICES
   A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
   B. Telecommunications services shall include:
      1. Windows-based personal computer dedicated to project telecommunications, with necessary software and laser printer.
      2. Internet Connections: Minimum of one; DSL modem or faster.
      3. Email: Account/address reserved for project use.
      4. Facsimile Service: Minimum of one dedicated fax machine/printer, with dedicated phone line.

1.04 TEMPORARY SANITARY FACILITIES
   A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
   B. Maintain daily in clean and sanitary condition.
   C. At end of construction, return facilities to same or better condition as originally found.
1.05 BARRIERS
A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition. Coordinate barriers with Owner and local authorities.
B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
C. Provide protection for plants designated to remain. Replace damaged plants.
D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
E. Traffic Controls: Coordinate traffic with Owner and local authorities.

1.06 EXTERIOR ENClosures
A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.08 SECURITY
A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
B. Coordinate with Owner's security program.

1.09 VEHICULAR ACCESS AND PARKING
A. Coordinate access and haul routes with local authorities and Owner.
B. Provide and maintain access to fire hydrants, free of obstructions.
C. Provide means of removing mud from vehicle wheels before entering streets.
D. Personnel parking is not allowed at the project site. Utilize remote campus parking spaces as instructed by Owner. Shuttle service to the project site may be required; coordinate with Owner.

1.10 WASTE REMOVAL
A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
B. Provide containers with lids. Remove trash from site on a weekly basis.
C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.11 PROJECT IDENTIFICATION
A. Provide project identification sign. Include the following minimum information:
   1. Project Name.
   2. General Contractor name and related information.
   3. Major Sub-Contractor's name and related information.
   4. Architect name and related information.
B. Sign to be 4 feet x 8 feet and backed with ¾ inch plywood.
C. Erect on site at location indicated.
D. No other signs are allowed without Owner permission except those required by law.
1.12 FIELD OFFICES
   A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack and drawing display table.
   B. Provide space for Project meetings, with table and chairs to accommodate 12 persons.
   C. Locate offices at location approved by Owner.

1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS
   A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion inspection.
   B. Restore existing facilities used during construction to original condition.
   C. Restore new permanent facilities used during construction to specified condition.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION
SECTION 01 6000
PRODUCT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General product requirements.
B. Transportation, handling, storage and protection.
C. Product option requirements.
D. Substitution limitations and procedures.
E. Procedures for Owner-supplied products.
F. Spare parts and maintenance materials.

1.02 RELATED SECTIONS

A. Section 01 4000 - Quality Requirements: Product quality monitoring.

1.03 SUBMITTALS

A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1. For selection from standard finishes, submit samples of the full range of the manufacturer's standard colors, textures, and patterns.

PART 2 PRODUCTS

2.01 NEW PRODUCTS

A. Provide new products unless specifically required or permitted by the Contract Documents.

2.02 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

2.03 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products of types and in quantities specified in individual specification sections.
B. Deliver to Project site; obtain receipt prior to final payment.
PART 3 EXECUTION

3.01 SUBSTITUTION PROCEDURES

A. General: Whenever a material, article, or piece of equipment is identified on the drawings or in the specifications by reference to manufacturer's or vendor's names, trade names or catalog numbers it is intended to establish a standard of quality for products. Other materials, articles, or equipment of other manufacturers which will adequately perform the duties imposed by the general design will be considered equally acceptable provided the material, article or equipment so proposed, is, in the opinion of the Owner, of equal substance and function. The Contractor is required to provide all documentation and research required for qualifying substitute materials as being equal or superior to the products specified. All equals shall be submitted to the Owner ten (10) working days prior to bidding and no equal shall be purchased or installed by the Contractor without the Architect/Engineer's written approval.

B. Instructions to Bidders specify time restrictions for submitting requests for substitutions during the bidding period. Comply with requirements specified in this section.

C. Architect will consider requests for substitutions only during the Bidding Phase. Substitutions will not be considered after the Bidding Phase.

D. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.

E. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.

F. A request for substitution constitutes a representation that the submitter:
   1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
   2. Will provide the same warranty for the substitution as for the specified product.
   3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
   4. Waives claims for additional costs or time extension which may subsequently become apparent.

G. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

H. Substitution Submittal Procedure:
   1. Submit required forms electronically.
   2. Use Architect provided Substitution Request Form.
   3. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution. Provide all documentation and research required for qualifying substitute materials as being equal or superior to the products specified.
   4. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence. Burden of proof is on proposer.
   5. The Architect will notify Contractor in writing of decision to accept or reject request.

3.02 OWNER-SUPPLIED PRODUCTS

A. Owner's Responsibilities:
   1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
   2. Arrange and pay for product delivery to site.
   3. On delivery, inspect products jointly with Contractor.
   4. Submit claims for transportation damage and replace damaged, defective, or deficient items.
5. Arrange for manufacturers' warranties, inspections, and service.

B. Contractor's Responsibilities:
   1. Review Owner reviewed shop drawings, product data, and samples.
   2. Receive and unload products at site; inspect for completeness or damage jointly with Owner.
   3. Handle, store, install and finish products.
   4. Repair or replace items damaged after receipt.

3.03 TRANSPORTATION AND HANDLING
   A. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
   B. Transport and handle products in accordance with manufacturer's instructions.
   C. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
   D. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
   E. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.
   F. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.04 STORAGE AND PROTECTION
   A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
   B. Store and protect products in accordance with manufacturers' instructions.
   C. Store with seals and labels intact and legible.
   D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to product.
   E. For exterior storage of fabricated products, place on sloped supports above ground.
   F. Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
   G. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
   H. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
   I. Prevent contact with material that may cause corrosion, discoloration, or staining.
   J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
   K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION
PRODUCT SUBSTITUTION REQUEST FORM

(During the Bidding Phase – Must be submitted a minimum of 10 days before the bid date)

Project: ___________________________ Substitution Request No: ___________________________

___________________________________________________________ From: ___________________________

To: ___________________________________________ Date: ___________________________

___________________________________________________________ A/E Project No: ___________________________

Reference: ___________________________________________ Contract For: ___________________________

Specifications Title: ___________________________________________

Section: ___________ Page: ___________ Article / Paragraph: ___________

Proposed Substitution: ___________________________________________

Manufacturer: ___________________________ Address: ___________________________

Telephone: ___________________________ Proposed Model No.: ___________________________

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its installation.

The undersigned certifies:

• Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
• Same warranty will be furnished for proposed substitution as for specified product.
• Same maintenance service and source of replacement parts, as applicable, is available.
• Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
• Proposed substitution does not affect dimensions and functional clearances.
• Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by substitution.

Submitted By: ___________________________ Signed: ___________________________

Firm: ___________________________ Address: ___________________________

Phone: ___________________________

A/E’s REVIEW & ACTION

☐ Substitution approved – Make submittals in accordance with Project Manual requirements.
☐ Substitution approved as noted – Make submittals in accordance with Project Manual requirements.
☐ Substitution rejected – Use specified materials.
☐ Substitution Request received too late – Use specified materials.

A/E Signature: ___________________________ Date: ___________________________

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ ___________

END OF REQUEST FORM
SECTION 01 7000
EXECUTION REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Examination, preparation, and general installation procedures.
B. Pre-installation meetings.
C. Cutting and patching.
D. Surveying for laying out the work.
E. Cleaning and protection.
F. Starting of systems and equipment.
G. Demonstration and instruction of Owner personnel.
H. Closeout procedures, except payment procedures.

1.02 RELATED SECTIONS

A. Section 01 3000 - Administrative Requirements: Submittals procedures.
B. Section 01 4000 - Quality Requirements: Testing and inspection procedures.
C. Section 01 5000 - Temporary Facilities and Controls: Temporary exterior enclosures.
D. Section 01 7800 - Closeout Submittals: Project record documents, operation and maintenance data, warranties and bonds.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Survey work: Submit name, address, and telephone number of Surveyor before starting survey work. Submit under 01 7000 specifications heading.
   1. On request, submit documentation verifying accuracy of survey work.
   2. Submit a copy of site drawing signed by the Land Surveyor, that the elevations and locations of the work are in conformance with Contract Documents.
   3. Submit surveys and survey logs for the project record.
C. Cutting and Patching: Submit written request in advance of cutting or alteration which affects:
   1. Structural integrity of any element of Project.
   2. Integrity of weather exposed or moisture resistant element.
   3. Efficiency, maintenance, or safety of any operational element.
   5. Work of Owner or separate Contractor.
   6. Include in request:
      a. Identification of Project.
      b. Location and description of affected work.
      c. Necessity for cutting or alteration.
      d. Description of proposed work and products to be used.
      e. Alternatives to cutting and patching.
      f. Effect on work of Owner or separate Contractor.
      g. Written permission of affected separate Contractor.
      h. Date and time work will be executed.
D. Project Record Documents: Accurately record actual locations of capped and active utilities. Mark all field modifications, P.R. changes, Owner Changes, RFI responses on as-built documents to be handed to Owner at Substantial Completion.

1.04 QUALIFICATIONS

A. For survey work, employ a land surveyor registered in the State in which the Project is located and acceptable to Architect, Owner and Civil Engineer. Submit evidence of Surveyor's Errors and Omissions insurance coverage in the form of an Insurance Certificate.

B. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located.

1.05 PROJECT CONDITIONS

A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.

C. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

D. Dust Control: Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

E. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
   1. Minimize amount of bare soil exposed at one time.
   2. Provide temporary measures such as berms, dikes, and drains, to prevent water flow.
   3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
   4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.

F. Noise Control: Provide methods, means, and facilities to minimize noise produced by construction operations.

G. Pest Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.

H. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

I. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by construction operations.

1.06 COORDINATION

A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Notify affected utility companies and comply with their requirements.

C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
D. Coordinate space requirements, supports, and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

F. Coordinate completion and clean-up of work of separate sections.

G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner’s activities.

PART 2 PRODUCTS

2.01 PATCHING MATERIALS

A. New Materials: As specified in product sections; match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.

C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 60 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.

C. Examine and verify specific conditions described in individual specification sections.

D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misfabrication.

E. Verify that utility services are available, of the correct characteristics, and in the correct locations.

F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance.

B. Seal cracks or openings of substrate prior to applying next material or substance.

C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

3.03 PREINSTALLATION MEETINGS

A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
B. Require attendance of parties directly affecting, or affected by, work of the specific section.

C. Notify Owner and Architect minimum seven (7) days in advance of meeting date.

D. Prepare agenda and preside at meeting:
   1. Review conditions of examination, preparation and installation procedures.
   2. Review coordination with related work.

E. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.

3.04 LAYING OUT THE WORK

A. Verify locations of survey control points prior to starting work.

B. Promptly notify Architect of any discrepancies discovered.

C. Contractor shall locate and protect survey control and reference points.

D. Control datum for survey is that indicated on Drawings.

E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.

F. Promptly report to Architect the loss or destruction of any reference point or relocation required because of changes in grades or other reasons.

G. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to Architect.

H. Utilize recognized engineering survey practices.

I. Establish a minimum of two permanent bench marks on site, referenced to established control points. Record locations, with horizontal and vertical data, on project record documents.

J. Establish elevations, lines and levels. Locate and lay out by instrumentation and similar appropriate means:
   1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
   2. Grid or axis for structures.
   3. Building foundation, column locations, ground floor elevations.

K. Periodically verify layouts by same means.

L. Maintain a complete and accurate log of control and survey work as it progresses.

M. On completion of foundation walls and major site improvements, prepare a certified survey illustrating dimensions, locations, angles, and elevations of construction and site work.

3.05 GENERAL INSTALLATION REQUIREMENTS

A. Install products as specified in individual sections, in accordance with manufacturer’s instructions and recommendations, and so as to avoid waste due to necessity for replacement.

B. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.

C. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.

D. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.

E. Make neat transitions between different surfaces, maintaining texture and appearance.

3.06 CUTTING AND PATCHING

A. Execute cutting and patching including excavation and fill to complete the work, to uncover work in order to install improperly sequenced work, to remove and replace defective or non-
conforming work, to remove samples of installed work for testing when requested, to provide
openings in the work for penetration of mechanical and electrical work, to execute patching to
complement adjacent work, and to fit products together to integrate with other work.

B. Execute work by methods to avoid damage to other work, and which will provide appropriate
surfaces to receive patching and finishing. In existing work, minimize damage and restore to
original condition.

C. Employ original installer to perform cutting for weather exposed and moisture resistant
elements, and sight exposed surfaces.

D. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior
approval.

E. Restore work with new products in accordance with requirements of Contract Documents.

F. Fit work air tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

G. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids
with fire rated material in accordance with Section 07840, to full thickness of the penetrated
element.

H. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest
intersection or natural break. For an assembly, refinish entire unit.

I. Make neat transitions. Patch work to match adjacent work in texture and appearance. Where
new work abuts or aligns with existing, perform a smooth and even transition.

J. Patch or replace surfaces that are damaged, lifted, discolored, or showing other imperfections
due to patching work. Repair substrate prior to patching finish. Finish patches to produce
uniform finish and texture over entire area. When finish cannot be matched, refinish entire
surface to nearest intersections.

3.07 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly
condition. Brush clean roadways, construction paths and parking spaces a minimum of two (2)
times per week for project duration.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed
or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning
to eliminate dust.

D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose
off-site; do not burn or bury. Owner reserves the right to charge General Contractor for cleaning
services after three (3) written notices to perform cleaning duties. After the third written notice,
the Owner shall have the services performed and the associated costs will be charged to the
General Contractor via deductive Change Order.

3.08 PROTECTION OF INSTALLED WORK

A. Protect installed work from damage by construction operations.

B. Provide special protection where specified in individual specification sections.

C. Provide temporary and removable protection for installed products. Control activity in immediate
work area to prevent damage.

D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement
of heavy objects, by protecting with durable sheet materials.
F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

G. Prohibit traffic from landscaped areas.

3.09 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.
B. Notify Architect and owner seven days prior to start-up of each item.
C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions which may cause damage.
D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
E. Verify that wiring and support components for equipment are complete and tested.
F. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

3.10 DEMONSTRATION AND INSTRUCTION

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.
B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of owner personnel.
E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

3.11 ADJUSTING

A. Adjust operating products and equipment to ensure smooth and unhindered operation.
B. Testing, adjusting, and balancing HVAC systems: See applicable Division 15 sections.

3.12 FINAL CLEANING

A. Execute final cleaning prior to Substantial Completion.
B. Use cleaning materials that are nonhazardous.
C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
D. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
E. Clean filters of operating equipment.
F. Clean debris from roofs, gutters, downspouts, and drainage systems.

G. Clean site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of in legal manner; do not burn or bury.

3.13 CLOSEOUT PROCEDURES

A. Make submittals that are required by governing or other authorities. Provide copies to Architect and Owner.

B. The General Contractor is to lead preliminary inspection to determine items to be listed for completion or correction for Contractor's Notice of Substantial Completion. Provide seven days notification to Owner and Architect for scheduling. General Contractor will document field notes for items to correct as well as level of finish required prior to final inspections. This preliminary inspection should take place at 95% completion.

C. Notify Architect, in writing, when work is considered ready for Substantial Completion. As part of this written notification, provide Contractor's final pre-punch list. Pre-punch list must show all work that is ongoing and give anticipated date of completion for the remaining work.

D. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect's review. List all work that is ongoing. On list of ongoing work, list anticipated completion dates for remaining work. If list is inaccurate or incomplete, punch list and close out documentation will not commence.

E. Correct items of work listed in executed Certificates of Substantial Completion and comply with requirements for access to Owner-occupied areas.

F. Accompany Architect and Owner on preliminary final inspection.

G. Notify Architect when work is considered finally complete.

H. Complete items of work determined by Architect's final inspection.

3.14 MAINTENANCE SERVICE

A. Furnish service and maintenance of components indicated in specification sections.

B. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.

D. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

END OF SECTION
SECTION 01 7800
CLOSEOUT SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Project Record Documents.
   B. Operation and Maintenance Data.
   C. Warranties and bonds.

1.02 RELATED SECTIONS
   A. General Conditions: Dates for applications for payment.
   B. Section 01 3000 - Administrative Requirements: Submittals procedures, shop drawings, product data, and samples.
   C. Section 01 7000 - Execution Requirements: Contract closeout procedures.
   D. Individual Product Sections: Specific requirements for operation and maintenance data.
   E. Individual Product Sections: Warranties required for specific products or Work.

1.03 SUBMITTALS
   A. Project Record Documents: Submit documents to Architect with claim for final Application for Payment.
   B. Operation and Maintenance Data:
      1. Submit required documentation in electronic format.
      2. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect will review draft and return one copy with comments.
      3. For equipment, or component parts of equipment put into service during construction and to be operated by Owner, submit completed documents within ten days after acceptance.
      4. Submit 1 copy of completed documents 15 days prior to final inspection. This copy will be reviewed and returned after final inspection, with Architect comments. Revise content of all document sets as required prior to final submission.
      5. Submit two sets of revised final documents in final form within 10 days after final inspection.
   C. Warranties and Bonds:
      1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
      2. Make other submittals within ten days after Date of Substantial Completion, prior to final Application for Payment.
      3. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten days after acceptance, listing the date of acceptance as the beginning of the warranty period.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 PROJECT RECORD DOCUMENTS
   A. General: All Closeout Submittals to be made in electronic format.
      1. Exception: Provide one paper hard copy, and one electronic copy of Record Drawings.
   B. Maintain on site one electronic set of the following record documents; record actual revisions to
the Work:
1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed shop drawings, product data, and samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

C. Ensure entries are complete and accurate, enabling future reference by Owner.

D. Store record documents separate from documents used for construction.

E. Record information concurrent with construction progress.

F. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates utilized.
   3. Changes made by Addenda and modifications.

G. Record Drawings: Legibly mark each item to record actual construction including:
   1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   2. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.
   3. Field changes of dimension and detail.
   4. Details not on original Contract drawings.
   5. Provide one paper hard copy, and one electronic copy of Record Drawings in AutoCAD format.

3.02 OPERATION AND MAINTENANCE DATA

A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers, including local source of supplies and replacement parts.

B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.

C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.

D. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.03 OPERATION AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

A. For Each Product, Applied Material, and Finish:
   1. Product data, with catalog number, size, composition, and color and texture designations.
   2. Information for re-ordering custom manufactured products.

B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.

C. Additional information as specified in individual product specification sections.

D. Provide a listing in Table of Contents for design data, with tabbed fly sheet and space for insertion of data.
3.04 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

A. For Each Item of Equipment and Each System:
   1. Description of unit or system, and component parts.
   2. Identify function, normal operating characteristics, and limiting conditions.
   3. Include performance curves, with engineering data and tests.
   4. Complete nomenclature and model number of replaceable parts.

B. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.

C. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

D. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

E. Provide servicing and lubrication schedule, and list of lubricants required.

F. Include manufacturer's printed operation and maintenance instructions.

G. Include sequence of operation by controls manufacturer.

H. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

I. Include test and balancing reports.

J. Additional Requirements: As specified in individual product specification sections.

3.05 OPERATION AND MAINTENANCE MANUALS

A. Provide all Operation and Maintenance Manuals in electronic format.

B. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

C. Prepare data in the form of an instructional manual.

D. Arrange content by systems under section numbers and sequence of Table of Contents of this Project Manual.

E. Contents: Prepare a Table of Contents for each volume, with each product or system description identified, in three parts as follows:
   1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.
   2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section number. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:
      a. Significant design criteria.
      b. List of equipment.
      c. Parts list for each component.
      d. Operating instructions.
      e. Maintenance instructions for equipment and systems.
      f. Maintenance instructions for special finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
   3. Part 3: Project documents and certificates, including the following:
      a. Shop drawings and product data.
      b. Air and water balance reports.
      c. Certificates.
      d. Photocopies of warranties and bonds.
F. Provide a listing in Table of Contents for design data, with tabbed dividers and space for insertion of data.

G. Table of Contents: Provide title of Project; names, addresses, and telephone numbers of Architect, Consultants, and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.

3.06 WARRANTIES AND BONDS

A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

B. Verify that documents are in proper form, contain full information, and are notarized.

C. Co-execute submittals when required.

D. Retain warranties and bonds until time specified for submittal.

E. Manual: Bind in commercial quality 8-1/2 x 11 inch three D side ring binders with durable plastic covers.

F. Cover: Identify each binder with typed or printed title WARRANTIES AND BONDS, with title of Project; name, address and telephone number of Contractor and equipment supplier; and name of responsible company principal.

G. Table of Contents: Neatly typed, in the sequence of the Table of Contents of the Project Manual, with each item identified with the number and title of the specification section in which specified, and the name of product or work item.

H. Separate each warranty or bond with index tab sheets keyed to the Table of Contents listing. Provide full information, using separate typed sheets as necessary. List Subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

END OF SECTION
SECTION 01 8200
DEMONSTRATION AND TRAINING

PART 1  GENERAL

1.01  SUMMARY

A. Demonstration of products and systems where indicated in specific specification sections.

B. Training of Owner personnel in operation and maintenance is required for:
   1. All software-operated systems.
   2. HVAC systems and equipment.
   3. Plumbing equipment.
   4. Electrical systems and equipment.
   5. Conveying systems.
   6. Landscape irrigation.
   7. Items specified in individual product Sections.

1.02  RELATED SECTIONS

A. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals.

B. Other Specification Sections: Additional requirements for demonstration and training.

1.03  SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Training Plan: Owner will designate personnel to be trained; tailor training to needs and skill-level of attendees.
   1. Submit to Architect for transmittal to Owner.
   2. Submit not less than four weeks prior to start of training.
   3. Revise and resubmit until acceptable.
   4. Provide an overall schedule showing all training sessions.
   5. Include at least the following for each training session:
      a. Identification, date, time, and duration.
      b. Description of products and/or systems to be covered.
      c. Name of firm and person conducting training; include qualifications.
      d. Intended audience, such as job description.
      e. Objectives of training and suggested methods of ensuring adequate training.
      f. Methods to be used, such as classroom lecture, live demonstrations, hands-on, etc.
      g. Media to be used, such as slides, hand-outs, etc.
      h. Training equipment required, such as projector, projection screen, etc., to be provided by Contractor.

C. Training Manuals: Provide training manual for each attendee; allow for minimum of two attendees per training session.
   1. Include applicable portion of O&M manuals.
   2. Include copies of all hand-outs, slides, overheads, video presentations, etc., that are not included in O&M manuals.
   3. Provide one extra copy of each training manual to be included with operation and maintenance data.

1.04  QUALITY ASSURANCE

A. Instructor Qualifications: Familiar with design, operation, maintenance and troubleshooting of the relevant products and systems.
   1. Provide as instructors the most qualified trainer of those contractors and/or installers who actually supplied and installed the systems and equipment.
2. Where a single person is not familiar with all aspects, provide specialists with necessary qualifications.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION

3.01 DEMONSTRATION - GENERAL

A. Demonstrations conducted during system start-up do not qualify as demonstrations for the purposes of this section, unless approved in advance by Owner.

B. Demonstration may be combined with Owner personnel training if applicable.

C. Operating Equipment and Systems: Demonstrate operation in all modes, including start-up, shut-down, seasonal changeover, emergency conditions, and troubleshooting, and maintenance procedures, including scheduled and preventive maintenance.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.
   2. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Non-Operating Products: Demonstrate cleaning, scheduled and preventive maintenance, and repair procedures.
   1. Perform demonstrations not less than two weeks prior to Substantial Completion.

3.02 TRAINING - GENERAL

A. Conduct training on-site unless otherwise indicated.

B. Owner will provide classroom and seating at no cost to Contractor.

C. Training schedule will be subject to availability of Owner's personnel to be trained; re-schedule training sessions as required by Owner; once schedule has been approved by Owner failure to conduct sessions according to schedule will be cause for Owner to charge Contractor for personnel "show-up" time.

D. Review of Facility Policy on Operation and Maintenance Data: During training discuss:
   1. The location of the O&M manuals and procedures for use and preservation; backup copies.
   2. Typical contents and organization of all manuals, including explanatory information, system narratives, and product specific information.
   3. Typical uses of the O&M manuals.

E. Product- and System-Specific Training:
   1. Review the applicable O&M manuals.
   2. For systems, provide an overview of system operation, design parameters and constraints, and operational strategies.
   3. Review instructions for proper operation in all modes, including start-up, shut-down, seasonal changeover and emergency procedures, and for maintenance, including preventative maintenance.
   4. Provide hands-on training on all operational modes possible and preventive maintenance.
   5. Emphasize safe and proper operating requirements; discuss relevant health and safety issues and emergency procedures.
   6. Discuss common troubleshooting problems and solutions.
   7. Discuss any peculiarities of equipment installation or operation.
   8. Discuss warranties and guarantees, including procedures necessary to avoid voiding coverage.
   9. Review recommended tools and spare parts inventory suggestions of manufacturers.
   10. Review spare parts and tools required to be furnished by Contractor.
11. Review spare parts suppliers and sources and procurement procedures.

F. Be prepared to answer questions raised by training attendees; if unable to answer during training session, provide written response within three days.

END OF SECTION
SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1  GENERAL

1.01  RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02  SUMMARY
A. This Section specifies cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following:
   1. Footings.
   2. Foundation walls.
   3. Slabs-on-grade.
   4. Suspended slabs.
   5. Concrete toppings.

B. WORK INCLUDED
   1. Design, fabrication, erection, and stripping of formwork for cast-in-place concrete including shoring, reshoring, falsework, bracing, proprietary forming systems, prefabricated forms, void forms, permanent metal forms, bulkheads, keys, blockouts, sleeves, pockets, and accessories. Erection shall include installation in formwork of items furnished by other trades.
   2. Furnish all labor and materials required to fabricate, deliver and install reinforcement and embedded metal assemblies for cast-in-place concrete, including steel bars, welded steel wire fabric, ties and supports.
   3. Furnish all labor and materials required to perform the following:
      a. Cast-in-place concrete
      b. Concrete mix designs
      c. Grouting structural steel baseplates
      d. Grouting precast concrete connections

C. Related Sections include the following:
   1. Division 2 Section "Decorative Cement Concrete Pavement" for decorative concrete pavement and walks.
   2. Division 3 Section "Cast-in-Place Architectural Concrete" for general building applications of specially finished formed concrete.
   3. Division 3 Section "Concrete Floor Topping" for emery- and iron-aggregate concrete floor toppings.
   4. Division 32 Section "Concrete Paving" for concrete pavement and walks.

1.03  DEFINITIONS
A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.04  SUBMITTALS
A. Product Data: For each type of product indicated.

B. Design Mixtures: For each concrete mixture submit proposed mix designs in accordance with ACI 318, chapter 5. Each proposed mix design shall be accompanied by a record of past performance.
   1. Submit mix designs on forms supplied at the end of this Section.
2. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

3. Indicate amounts of mixing water to be withheld for later addition at Project site.

4. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

5. Do not reproduce the structural drawings for use as shop drawings.


C. Steel Reinforcement Submittals for Information: Mill test certificates of supplied concrete reinforcing, indicating physical and chemical analysis.

1. Samples: For waterstops vapor retarder.

D. Qualification Data: For Installer.

E. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:

1. Aggregates. Include service record data indicating absence of deleterious expansion of concrete due to alkali aggregate reactivity.

F. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials
2. Admixtures
3. Form materials and form-release agents
4. Steel reinforcement and accessories
5. Fiber reinforcement
6. Waterstops
7. Curing compounds
8. Floor and slab treatments
9. Bonding agents
10. Adhesives
11. Vapor retarders
12. Semirigid joint filler
13. Joint-filler strips
14. Repair materials

G. Submit manufacturer's certification of maximum chloride ion content in admixtures.

H. Fly ash: Submit certification attesting to carbon content and compliance with ASTM C618.

I. Construction Joint Layout: Submit a diagram of proposed construction joint locations for horizontal framing that exceed the limits of a single placement as stated in the structural notes, other than those indicated on the Drawings.

J. Floor surface flatness and levelness measurements to determine compliance with specified tolerances.

K. Minutes of preinstallation conference.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

B. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
2. **Source Limitations:** Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.

C. **Welding:** Qualify procedures and personnel according to AWS D1.4, "Structural Welding Code--Reinforcing Steel."

D. **ACI Publications:** Comply with the following unless modified by requirements in the Contract Documents:
   1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
   2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

E. **Concrete Testing Service:** Owner may engage a qualified independent testing agency to perform material evaluation tests.
   1. **Preinstallation Conference:** Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
   2. Before submitting design mixtures, review concrete design mixture and examine procedures for ensuring quality of concrete materials. Require representatives of each entity directly concerned with cast-in-place concrete to attend, including the following:
      a. Contractor's superintendent.
      b. Independent testing agency responsible for concrete design mixtures.
      c. Ready-mix concrete manufacturer.
      d. Concrete subcontractor.
      e. Specialty concrete finish subcontractor.
   3. Review special inspection and testing and inspecting agency procedures for field quality control, concrete finishes and finishing, cold- and hot-weather concreting procedures, curing procedures, construction contraction and isolation joints, and joint-filler strips, semirigid joint fillers, forms and form removal limitations, shoring and reshoring procedures, vapor-retarder installation, anchor rod and anchorage device installation tolerances, steel reinforcement installation, floor and slab flatness and levelness measurement, concrete repair procedures, and concrete protection.

1.06 **DELIVERY, STORAGE, AND HANDLING**

A. **Steel Reinforcement:** Deliver, store, and handle steel reinforcement to prevent bending and damage.

B. **Waterstops:** Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

C. **Store all proprietary materials in accordance with manufacturer's recommendations.**

**PART 2 PRODUCTS**

2.01 **FORM-FACING MATERIALS**

A. **Smooth-Formed Finished Concrete:** Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   1. Plywood, metal, or other approved panel materials.
   2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
      a. High-density overlay, Class 1 or better.
      b. Medium-density overlay, Class 1 or better; mill-release agent treated and edge sealed.
      c. Structural 1, B-B or better; mill oiled and edge sealed.
      d. B-B (Concrete Form), Class 1 or better; mill oiled and edge sealed.
   3. **Steel Forms**

B. **Rough-Formed Finished Concrete:** Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.
   1. Furnish units that will leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
   2. Furnish ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.
   3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.
   4. Expanded Polystyrene (EPS) Geofoam:
   5. Lightweight expanded polystyrene with a minimum compressive strength of 2.2 pounds per square inch (psi) at a 1% deformation.
   6. Geofoam shall be in compliance with ASTM D 6817.
   7. Geofoam shall be shaped to provide continuous support for raised slabs or to act as a lightweight fill material at locations indicated on the drawings.
   8. All Geofoam blocks shall be treated by the manufacturer with a tested and proven termite treatment for below grade applications, 3 year minimum field exposure. The treatment shall be EPA registered, meet the requirements of ICC ES AC 239, and be recognized in an ICC ES report.
   9. Available Products:
      b. InsulFoam GF, Insulfoam, LLC.
      c. STEEL REINFORCEMENT

F. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

G. Low-Alloy-Steel Reinforcing Bars: ASTM A 706/A 706M, deformed.

H. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.

I. REINFORCEMENT ACCESSORIES

J. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain-steel bars, cut bars true to length with ends square and free of burrs.

K. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
   1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
   2. For slabs on grade and slabs on void forms, provide sand plates, horizontal runners, or precast concrete blocks on bottom where base material will not support chair legs or where vapor barrier has been specified.

2.02 MECHANICAL SPLICES

A. Provide mechanical splices designed to develop, in tension and compression, 125 percent of the minimum ASTM specified yield strength of the smaller bar being spliced. The following splicing systems are acceptable:
1. Erico "Cadweld T-Series"
2. Erico "Lenton"
3. Dayton Barsplice "Bar-Grip"
4. Dayton Barsplice "Grip-Twist"

2.03 DOWEL BAR ANCHORS
A. Provide dowel bar anchors and threaded dowels designed to develop, in tension and compression, 125 percent of the minimum ASTM specified yield strength of the dowel bars. Unless otherwise indicated, anchors shall be furnished with ACI standard 90 degree hooks. Dowels shall be furnished by the anchor supplier. The following dowel splicing systems are acceptable:
1. Richmond Screw Anchor "Dowel Bar Splicer"
2. Erico "Lenton Form Saver"
3. Dayton Barsplice "Grip-Twist"

2.04 EMBEDDED METAL ASSEMBLIES
A. Steel Shapes and Plates: ASTM A36
B. Headed Studs: Heads welded by full-fusion process, as furnished by TRW Nelson Stud Welding Division.
C. Welded Deformed Bar Anchors: Welded by full fusion process, as furnished by TRW Nelson Stud Welding Division.
D. Reinforcing Bars to be Welded: ASTM A706.
E. Coatings
2. Cold Galvanizing Compound for field repair of galvanizing: "ZRC Cold Galvanizing Compound" by ZRC Chemical Products Company, Quincy, Massachusetts.
3. CONCRETE MATERIALS
F. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
1. Portland Cement: ASTM C 150, Type I/II, gray. Supplement with the following:
   a. Fly Ash: ASTM C 618, Class F.
G. Normal-Weight Aggregates: ASTM C 33, 3M coarse aggregate or better, graded. Provide aggregates from a single source.
1. Maximum Coarse-Aggregate Size: As indicated on drawings.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

2.05 ADMIXTURES
B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
7. WATERSTOPS

1. VAPOR RETARDERS

D. Plastic Vapor Retarder: ASTM E 1745, Class A.

1. Membrane shall have the following properties:
   a. Minimum 15 mils thickness.
   b. Permeance Rating: ASTM E96, 0.01 Perms [grains/(ft² * hr *- in Hg)] or lower as tested after mandatory conditioning (ASTM E 154 sections 8, 11, 12, 13)
   c. Installation shall be in accordance with ASTM E1643 and manufacturer’s instructions.

2. Products:
   a. Carlisle Coatings & Waterproofing, Inc.: Blackline 400.
   b. Epro; Ecoshield-E 15 mil.
   c. Inteplast Group; Barrier Bac VBC-350 Composite Vapor Retarder
   d. Reef Industries; Vaporguard.
   e. Stego Wrap 15 mil, by Stego.

3. Accessories
   a. Perimeter/seam sealing tape for use with membranes that are not self-adhering to the underside of concrete slabs on void forms:
      1) Crete Claw detail tape by Stego Industries, LLC, for adhering vapor retarder membrane to the underside of concrete surface at slabs on carton void forms, 3-inch and 6-inch widths as noted in Part 3.
      2) StegoTack double-sided adhesive tape by Stego Industries, LLC, for adhering membrane to concrete at gradebeams.
   b. Manufacturer’s recommended standard adhesive or pressure sensitive tape for general use.

4. CURING MATERIALS

E. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

1. Products:
   a. Axim Concrete Technologies; CATEXOL Cimfilm.
   b. BASF Construction Chemicals – Building Systems; Confilm.
   c. ChemMasters; Spray-Film.
   d. Conspec by Dayton Superior; Aquafilm.
   e. Dayton Superior Corporation; Sure Film (J-74).
   f. Edoco by Dayton Superior; BurkeFilm.
   g. Euclid Chemical Company (The), an RPM company; Eucobar.
   h. Kaufman Products, Inc.; Vapor Aid.
   i. Lambert Corporation; LAMBCO Skin.
   j. L&M Construction Chemicals, Inc.; E-Con.
   k. Meadows, W. R., Inc.; EVAPRE.
   l. Metalcrete Industries; Waterhold.
   m. Nox-Crete Products Group; Monofilm.
   n. Sika Corporation, Inc.; SikaFilm.
   o. SpecChem, LLC; Spec Film.
   p. Symons by Dayton Superior; Finishing Aid.
   q. TK Products, Division of Sierra Corporation; TK-2120 TRI-FILM.
   r. Unitex; Pro-Film.
   s. Vexcon Chemicals, Inc.; Certi-Vex Envio Set.

F. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

G. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
H. Water: Potable.

I. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
   1. Products:
      a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
      b. BASF Construction Chemicals – Building Systems; Kure 200.
      c. ChemMasters; Safe-Cure Clear.
      d. Conspec by Dayton Superior; W.B. Resin Cure.
      e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
      f. Edoco by Dayton Superior; Res X Cure WB.
      g. Euclid Chemical Company (The), an RPM company; Kurez W VOX; TAMMSCURE WB 30C.
      i. Lambert Corporation; Aqua Kure-Clear.
      j. L&M Construction Chemicals, Inc.; L&M Cure R.
      l. Nox-Crete Products Group; Resin Cure E.
      m. Right Pointe; Clear Water Resin.
      n. SpecChem, LLC; Spec Rez Clear.
      o. Symons by Dayton Superior; Resi-Chem Clear.
      p. TK Products, Division of Sierra Corporation; TK-2519 DC WB.
      q. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.

J. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
   1. Products:
      a. Anti-Hydro International, Inc.; AH Clear Cure WB.
      b. BASF Construction Chemicals – Building Systems; Kure-N-Seal WB.
      c. ChemMasters; Safe-Cure & Seal 20.
      d. Conspec by Dayton Superior; Cure and Seal WB.
      e. Cresset Chemical Company; Crete-Trete 309-VOC Cure & Seal.
      f. Dayton Superior Corporation; Safe Cure and Seal (J-18).
      g. Edoco by Dayton Superior; Spartan Cote WB II.
      h. Euclid Chemical Company (The), an RPM company; Aqua Cure VOX; Clearseal WB 150.
      j. Lambert Corporation; Glazecote Sealer-20.
      k. L&M Construction Chemicals, Inc.; Dress & Seal WB.
      m. Metalcrete Industries; Metcure.
      n. Nox-Crete Products Group; Cure & Seal 150E.
      o. Symons by Dayton Superior; Cure & Seal 18 Percent E.
      p. TK Products, Division of Sierra Corporation; TK-2519 WB.
      q. Vexcon Chemicals, Inc.; Starseal 309.

K. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 25 percent solids, nondissipating, certified by curing compound manufacturer to not interfere with bonding of floor covering.
   1. Products:
      a. BASF Construction Chemicals – Building Systems; Kure-N-Seal W.
      b. ChemMasters; Safe-Cure Clear.
      c. Conspec by Dayton Superior; High Seal.
      d. Dayton Superior Corporation; Safe Cure and Seal (J-19).
      e. Edoco by Dayton Superior; Spartan Cote WB II 20 Percent.
f. Euclid Chemical Company (The), an RPM Company; Diamond Clear VOX; Clearseal WB STD.
g. Kaufman Products, Inc.; SureCure Emulsion.
h. Lambert Corporation; Glazecote Sealer-20.
i. L&M Construction Chemicals, Inc.; Dress & Seal WB.
k. Metalcrete Industries; Metcure 0800.
l. Nox-Crete Products Group; Cure & Seal 200E.
m. Symons by Dayton Superior; Cure & Seal 18 Percent E.
n. Vexcon Chemicals, Inc.; Starseal 0800.

2. RELATED MATERIALS

M. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, per ASTM D 2240.
N. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
O. Bonding Agent: Two component, moisture insensitive, extended pot life epoxy bonding agent equal to "Sikadur 32 Hi-Mod LPL", by the Sika Corporation.

P. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

Q. Reglets: Fabricate reglets of not less than 0.0217-inch thick, galvanized steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.
R. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.
S. Dovetail anchor slots: For receiving inserts for anchoring masonry veneer, cast stone, and natural stone to concrete structure. Slots shall be 22 gauge, galvanized sheet steel and dovetail slotted, with foam filler equal to No. 305 made by Hohmann and Barnard, Inc., or approved equal. Slots shall be 1" wide and 1" deep unless noted otherwise.
T. Adjustable wedge inserts: For attachment of masonry shelf angles to spandrel beams. Provide Hohmann & Barnard wedge inserts by Hohmann & Barnard, Inc., or approved equal. Type, size and capacity shall be as shown on the Drawings.

U. Sleeves and Blockouts: Formed with galvanized metal, galvanized pipe, polyvinyl chloride pipe, fiber tubes, or wood.
V. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required; of strength and character to maintain formwork in place while placing concrete.

2.06 REPAIR MATERIALS

A. Repair Underlayment: Pre-packaged, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested according to ASTM C 109/C 109M.

B. Repair Overlay: Pre-packaged, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

1. Compressive Strength: 1200 psi minimum at 1 day; 6000 psi minimum at 28 days when tested according to ASTM C 109.
2. Bond Strength: 1800 psi minimum at 28 days when tested according to ASTM C 882 (Modified).
3. Product / Manufacturer: SikaTop 122 Plus or SikaTop 123 Plus, Sika Corporation, or approved equal.

D. Repair Mortar – Form and Pour or Pump: Pre-packaged, cement-based, single-component, polymer-modified, silica-fume-enhanced, cementitious mortar.
1. Compressive Strength: 3000 psi minimum at 1 day; 6500 psi at 28 days when tested according to ASTM C 109.
2. Bond Strength: 2200 psi at 28 days when tested according to ASTM C 882 (modified).
3. Product / Manufacturer: Sika MonoTop 611, Sika Corporation, or approved equal.

2.07 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
2. The required average strength above specified strength shall be based on the procedure given in the "MIX DESIGN SUBMITTAL FORM" appended to the end of this Specification.
3. Required average strength above specified strength:
   a. Based on a record of past performance: Determination of required average strength above specified strength shall be based on the standard deviation record of the results of at least 30 consecutive strength tests in accordance with ACI 318, Chapter 5.3 by the larger amount defined by formulas 5-1 and 5-2.
   b. Based on laboratory trial mixtures: Proportions shall be selected on the basis of laboratory trial batches prepared in accordance with ACI 318, Chapter 5.3.3.2 to produce an average strength greater than the specified strength f’c by the amount defined in table 5.3.2.2.
      1) Proportions of ingredients for concrete mixes shall be determined by an independent testing laboratory or qualified concrete supplier.
      2) For each proposed mixture, at least three compressive test cylinders shall be made and tested for strength at the specified age. Additional cylinders may be made for testing for information at earlier ages.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
1. Fly Ash: 20 percent.
2. Silica Fume: 10 percent.
3. Combined Fly Ash, Pozzolans, and Silica Fume: 30 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

C. Limit water-soluble, chloride-ion content in hardened concrete to 0.06 percent by weight of cement.

D. Admixtures: Use admixtures according to manufacturer's written instructions.
1. Do not use admixtures which have not been incorporated and tested in accepted mixes.
2. Use water-reducing, high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
3. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
4. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.08 CONCRETE MIXTURES FOR BUILDING ELEMENTS
A. Proportion normal-weight concrete mixture as indicated on drawings.

1. FABRICATING REINFORCEMENT

B. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.09 FABRICATION OF EMBEDDED METAL ASSEMBLIES
A. Fabricate metal assemblies in the shop. Holes shall be made by drilling or punching. Holes shall not be made by or enlarged by burning. Welding shall be in accordance with AWS D1.1.

B. Welding of deformed bar anchors and headed stud anchors shall be done by full fusion process equal to that of TRW Nelson Stud Welding Division. A minimum of two headed studs shall be tested at the start of each production period for proper quality control. The studs shall be capable of being bent 45 degrees without failure.

C. Welding of reinforcement shall be done in accordance with AWS D1.4, using the recommended preheat temperature and electrode for the type of reinforcement being welded. Bars larger than no. 9 shall not be welded. Welding shall be subject to the observance and testing of the Testing Laboratory.

D. Metal assemblies exposed to earth, weather or moisture shall be hot dip galvanized. All other metal assemblies shall be either hot dip galvanized or painted with an epoxy paint. Repair galvanizing after welding with a Cold Galvanizing compound installed in accordance with the manufacturer's instructions. Repair painted assemblies after welding with same type of paint.

2.10 CONCRETE MIXING
A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M[ and ASTM C 1116], and furnish batch ticket information.
1. When air temperature is between 85 and 95 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 95 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.
PART 3  EXECUTION

3.01  FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

1. Vertical alignment:
   a. Lines, surfaces and arises less than 100 feet in height - 1 inch.
   b. Outside corner of exposed corner columns and control joints in concrete exposed to view less than 100 feet in height - 1/2 inch.
   c. Lines, surfaces and arises greater than 100 feet in height - 1/1000 times the height but not more than 6 inches.
   d. Outside corner of exposed corner columns and control joints in concrete exposed to view greater than 100 feet in height - 1/2000 times the height but not more than 3 inches.

2. Lateral alignment:
   a. Members - 1 inch.
   b. Centerline of openings 12 inches or smaller and edge location of larger openings in slabs - 1/2 inch.

3. Level alignment:
   a. Elevation of slabs-on-grade - 3/4 inch.
   d. Lintels, sills, parapets, horizontal grooves, and other lines exposed to view - 1/2 inch.

   a. 12 inch dimension or less - plus 3/8 inch to minus 1/4 inch.
   b. Greater than 12 inch to 3 foot dimension - plus 1/2 inch to minus 3/8 inch.
   c. Greater than 3 foot dimension - plus 1 inch to minus 3/4 inch.

5. Relative alignment:
   a. Stairs:
      1) Difference in height between adjacent risers - 1/8 inch.
      2) Difference in width between adjacent treads - 1/4 inch.
      3) Maximum difference in height between risers in a flight of stairs - 3/8 inch.
      4) Maximum difference in width between treads in a flight of stairs - 3/8 inch.
   b. Grooves:
      1) Specified width 2 inches or less - 1/8 inch.
      2) Specified width between 2 inches and 12 inches - 1/4 inch.
   c. Vertical alignment of outside corner of exposed corner columns and control joint grooves in concrete exposed to view - 1/4 inch in 10 feet.
   d. All other conditions - 3/8 inch in 10 feet.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
   2. Class C, 1/2 inch for rough-formed finished surfaces.

D. Construct forms tight enough to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
   1. Install keyways, reglets, recesses, and the like, for easy removal.
   2. Do not use rust-stained steel form-facing material.
F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.

G. Construct formwork to cambers shown or specified on the Drawings to allow for structural deflection of the hardened concrete. Provide additional elevation or camber in formwork as required for anticipated formwork deflections due to weight and pressures of concrete and construction loads.

H. Forms for Exposed Concrete:
1. Drill forms from the contact face to the outside to suit form ties used. Do not splinter forms by driving ties through improperly prepared holes.
2. Provide sharp, clean corners at intersecting planes without visible edges or offsets. Back joints with extra studs or girts if required to maintain corners.
3. Provide extra studs, girts, walers, and bracing to prevent bowing of forms.
4. Form shapes, recesses and projections with smooth finish materials, and install in forms with sealed joints.
5. Locate form ties in level horizontal rows, plumbed vertically, and in symmetrical arrangements, unless noted otherwise.

I. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

J. Chamfer exterior corners and edges of permanently exposed concrete.

K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

L. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

M. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

N. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement, anchoring devices, and embedded items.
1. Do not apply form release agent where concrete surfaces are scheduled to receive subsequent finishes which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."
   a. Spacing within a bolt group: 1/8"
   b. Location of bolt group (center): 1/2"
   c. Rotation of bolt group: 5 degrees
   d. Angle off vertical: 5 degrees
   e. Bolt projection: ± 3/8"
2. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
3. Install dovetail anchor slots in concrete structures as indicated.

B. REMOVING AND REUSING FORMS
C. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.

2. Minimum cumulative curing times may be reduced by the use of high-early strength cement or forming systems which allow form removal without disturbing shores, but only after the Contractor has demonstrated to the satisfaction of the Architect that the early removal of forms will not cause excessive sag, distortion or damage to the concrete elements.

3. Wood forms shall be completely removed. Provide temporary openings if required.

4. Provide adequate methods of curing and thermal protection of exposed concrete if forms are removed prior to completion of specified curing time.

5. Areas required to support construction loads in excess of 20 psf shall be reshored to properly distribute construction loading. Construction loads up to the rated live load capacity may be placed on unshored construction provided the concrete has attained the specified 28 day compressive strength.

6. Obtaining concrete compressive strength tests for the purposes of form removal shall be the responsibility of the Contractor.

7. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

D. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

E. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

1. VAPOR RETARDERS

F. Plastic Vapor Retarders: Place, protect, and repair vapor retarders according to ASTM E 1643 and manufacturer's written instructions.

G. Lap joints 6 inches and seal with tape as noted below.

1. Vapor retarder membrane seal at slabs on void forms for use with membranes that are not self-adhering to the underside of concrete slabs: Seal vapor retarder membrane to underside of slab using perimeter/seam seal tape applied continuously to perimeter of vapor retarder membrane at grade beams (3in. tape) and at the seams at interior conditions (6in. tape).
   a. Apply double-sided adhesive tape top surface of gradebeam and adhere membrane to tape. Refer to the drawings for detail.
   b. Remove any dirt or debris from membrane prior to application of sealing tape.

2. General sealing and at slabs on grade: Use manufacturer's standard adhesive or pressure sensitive tape for sealing membrane at seams, pipe penetrations, tears, etc.

H. STEEL REINFORCEMENT


1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

J. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

K. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
1. Weld reinforcing bars according to AWS D1.4, where indicated. Only steel conforming to ASTM A706 may be welded.

L. Installation tolerances:
1. Top and bottom bars in slabs, girders, beams and joists:
   a. Members 8” deep or less: ±3/8”
   b. Members more than 8” deep: ±1/2”
2. Concrete Cover to Formed or Finished Surfaces: ±3/8” for members 8” deep or less; ±1/2” for members over 8” deep, except that tolerance for cover shall not exceed 1/3 of the specified cover.
3. Concrete Cover: Refer to the Structural Notes.

M. Splices: Provide standard reinforcement splices by lapping and tying ends. Comply with ACI 318 for minimum lap of spliced bars where not specified on the documents. No. 14 and 18 bars shall not be lap spliced.

N. Mechanical Splices: Use for splicing of bars larger than no. 11 or where no. 11 bars are spliced to larger size bars and where indicated on the drawings. Comply with manufacturer's instructions for preparation of bars and installation procedures.

O. Field Welding of Embedded Metal Assemblies: All paint and galvanizing shall be removed in areas to receive field welds. All areas where paint or galvanizing has been removed shall be field repaired with the specified paint or cold galvanizing compound, respectively.

P. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

Q. Install welded wire reinforcement in longest practicable lengths on bar supports spaced to minimize sagging. Lap edges and ends of adjoining sheets at least one mesh spacing. Offset laps of adjoining sheet widths to prevent continuous laps in either direction. Lace overlaps with wire.

3.03 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
   1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
   2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
   3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
   4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
   5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
   6. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   7. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:
   1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
   2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting
action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.
1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface, unless otherwise indicated.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface where joint sealants, specified in Division 7 Section "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.04 WATERSTOPS

A. Self-Expanding Strip Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions, adhesive bonding, mechanically fastening, and firmly pressing into place. Install in longest lengths practicable.

3.05 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.

B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
1. Water may be added to the concrete at the project site only if specifically withheld at the time of batching and specifically noted on the batch ticket.

C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, and only if specifically noted as withheld on the batch ticket.
1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.
2. Water content shall not exceed the maximum specified water/cement ratio for the mix.

D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
4. Do not permit concrete to drop freely any distance greater than 20'-0" for concrete containing a high range water reducing admixture (superplasticizer) or 5'-0" for other concrete. Provide chute or tremie to place concrete where longer drops are necessary. Do not place concrete into excavations with standing water. If place of deposit cannot be pumped dry, pour concrete through a tremie with its outlet near the bottom of the place of deposit.
5. Pump priming grout shall be discarded and not used in the structure.
E. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   3. Screed slab surfaces with a straightedge and strike off to correct elevations.
   4. Slope surfaces uniformly to drains where required.
   5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

F. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
   1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
   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, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

G. Hot-Weather Placement: Comply with ACI 305.1 and as follows:
   1. Maintain concrete temperature below 95 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
   2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.06 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
   1. Apply to concrete surfaces exposed to public view, to be covered with a coating or covering material applied directly to concrete.
   2. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.07 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.
C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations as shown on Drawings. Set anchor bolts for machines and equipment at correct elevations, complying with diagrams or templates from manufacturer furnishing machines and equipment.

1. Housekeeping pads: Concrete fill shall be normal weight concrete, reinforced with 4x4-W2.1xW2.1 welded wire mesh set at middepth of pad. Trowel concrete to a dense, smooth finish. Set anchor bolts for securing mechanical or electrical equipment during pouring of concrete fill.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items. Cast-in inserts and accessories as shown on Drawings. Screed, tamp, and trowel-finish concrete surfaces.

1. Mix one part Portland Cement and two parts crushed stone or gravel passing 3/8" sieve and retained on a 1/8" sieve, measured by volume with only sufficient water to produce a dry consistency for proper placing and finishing.

2. Placing: Place fill and reinforcement in all steel pan treads and landings. Reinforcement shall be 2"x2" by 14 gauge welded wire fabric extending over the area of each tread and landings. Support reinforcement 3/4" above bottom of steel pans. After sufficient hardening of the concrete fill, steel trowel the exposed surface to a smooth finish.

3. Abrasive aggregate: Sprinkle abrasive aggregate into the troweled concrete fill in two shakes at the rate of 1/4 pound per square foot and trowel lightly into the surface.

E. Protective slabs ("Mud slabs"): Concrete fill shall be normal weight concrete (2500 psi minimum) with a minimum thickness of 3 1/2". Reinforce protective slabs with 6x6-W2.9xW2.9 welded wire mesh reinforcing. Finish slab to a wood float finish.

3.08 INSTALLATION OF NON-SHRINK GROUT UNDER BASEPLATES

A. Grout under all bearing and baseplates. Comply with manufacturer's instructions. Do not dry pack.

B. Mixing: Use a mechanical mixer. Add only enough water to make grout placeable. Do not mix more grout than can be used in 20 minutes. Under no circumstances shall grout be retempered.

3.09 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305.1 for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.

E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.
   b. Continuous water-fog spray.
   c. Absorbive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorbive covers.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
   b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
   c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
   a. After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound will not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

A. Surface Defects in Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Owner's approval.

B. Contractor shall submit a detailed, descriptive procedure listing proposed pre-packaged repair materials and methods for the repair of surface defects prior to the start of repair work.

C. Patching Mortar: Mix, place and finish pre-packaged repair mortar in accordance with manufacturer's instructions.

D. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, minor honeycombs and rock pockets with no exposed reinforcement, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out minor honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface, 1/4 inch deep minimum. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
   2. Repair defects on surfaces exposed to view using pre-packaged repair mortar so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

E. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
   1. Repair finished surfaces containing defects. Surface defects include minor spalls, pop outs, honeycombs and rock pockets with no exposed reinforcement, crazing and cracks in excess of 0.01 inch wide that do not penetrate to reinforcement, and other objectionable conditions.
2. After concrete has cured at least 14 days, correct high areas by grinding.
3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.
4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with patching mortar. Remove defective areas with clean, square cuts, ¼” deep minimum. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Place, compact, and finish patching mortar to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
8. Unapproved and defective repairs shall be removed and replaced in accordance with requirements provided by the Engineer at no additional cost to the Owner.

3.11 STRUCTURAL REPAIRS
A. Structurally Defective Concrete: Structural defects include spalls, honeycombs or rock pockets with exposed reinforcement, hollow-sounding concrete, cracks that penetrate to the reinforcement or completely through concrete elements, inadequate cover over reinforcement, and other conditions that affect the structural performance or durability of the concrete as determined by the Engineer.
B. Repair structural defects in concrete in accordance with plans, specifications, details, etc. provided by the Engineer.
1. The cost of the additional services provided by the Engineer to prepare the repair documents, and to oversee the repair work shall be borne by the Contractor.
C. Unapproved and defective repairs shall be removed and replaced in accordance with requirements provided by the Engineer at no additional cost to the Owner.

3.12 CLEANUP
A. Imperfect or damaged work or any material damaged or determined to be defective before final completion and acceptance of the entire job shall be satisfactorily replaced at the Contractor's expense, and in conformity with all of the requirements of the Drawings and Specifications. Removal and replacement of concrete work shall be done in such manner as not to impair the appearance or strength of the structure in any way.
B. Cleaning: Upon completion of the work all forms, equipment, protective coverings and any rubbish resulting therefrom shall be removed from the site. After sweeping floors, wash floors with clean water. Finished concrete surfaces shall be left in a clean condition, satisfactory to the Owner.
C. All parking decks in open garages shall be tested by the contractor for proper drainage at the completion of the project. Decks shall be flooded with water after curing of the final coat of sealer. Drains not functioning properly shall be cleaned and repaired. Ponding areas shall be marked and brought to the attention of the Architect.
3.13 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner may engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing and Inspecting: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections may include as indicated on the Special Inspections Notes and as indicated below:
   1. Steel reinforcement placement.
   2. Steel reinforcement welding.
   3. Headed bolts and studs.
   4. Verification of use of required design mixture.
   5. Concrete placement, including conveying and depositing.
   6. Curing procedures and maintenance of curing temperature.
   7. Verification of concrete strength before removal of shores and forms from beams and slabs.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
   1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
   2. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
      a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
   3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
   4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
   6. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   7. Compression Test Specimens: ASTM C 31/C 31M.
      a. Cast and laboratory cure four cylinders for each composite sample.
         1) Do not transport field-cast cylinders until they have cured for a minimum of 24 hours.
      c. Test one cylinder at 7 days
      d. Test two cylinders at 28 days
      e. Test one cylinder at 56 days
      f. If 4” by 8” cylinders are used, provide 1 additional cylinder at each stage

8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive...
strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
   a. When the strength level of the concrete for any portion of the structure, as indicated by cylinder tests, falls below the specified requirements, the Contractor shall provide improved curing conditions and/or adjustments to the mix design as required to obtain the required strength. If the average strength of the laboratory control cylinders falls so low as to be deemed unacceptable, the Contractor shall follow the core test procedure set forth in ACI 301, Section 1.6. Locations of core tests shall be approved by the Architect. Core sampling and testing shall be at Contractors expense.
   b. If the results of the core tests indicate that the strength of the structure is inadequate, any replacement, load testing, or strengthening as may be ordered by the Architect shall be provided by the Contractor without cost to the Owner.

12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

13. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.

E. Measure floor and slab flatness and levelness according to ASTM E 1155 within 48 hours of finishing.

END OF SECTION
SECTION 03 3119
CONCRETE FLOOR JOINT FILLERS

PART 1 – GENERAL

1.01 GENERAL
A. Provide all labor, products and equipment required to properly install semi-rigid filler in joints in the interior concrete floor slabs.

1.02 SCOPE OF WORK
A. Fill all contraction (control) and construction (formed) joints in the interior concrete floor slab where the joints will be exposed to material handling vehicle wheels.
B. Refer to drawings for additional joints possibly requiring filler, such as joints under racks, joints at column diamonds and pads, etc.

1.03 RELATED WORK
A. Section 03 3000 – “Cast-In-Place Concrete”
B. Section 07 9005 – “Joint Sealants”

1.04 APPLICABLE STANDARDS
A. Products and installation shall be in compliance or exceed the joint filling criteria established in the latest ACI 302 and ACI 360 Committee published documents.

1.05 CONTRACTOR QUALIFICATIONS
A. Installer shall have a minimum of three (3) years experience in the installation of semi-rigid fillers on industrial floors.
B. Use only Manufacturer Approved Applicators for work covered by this section.
C. Approved Applicator shall use tools and equipment specifically designed for the preparation and placement of industrial joint fillers.

1.06 SUBMITTALS
A. Joint Filler Materials: Submit Manufacturer’s data describing joint filler proposed for use on the project.
B. Submit Manufacturer’s Approved Applicator Certificate.

PART 2 – PRODUCTS

2.01 CONTROL JOINT FILLER:
A. Provide semi-rigid, two-part, self-leveling, 100% solids content epoxy control and construction joint fillers intended for each condition listed.
B. Utilize products with physical values meeting the following minimum values.

<table>
<thead>
<tr>
<th>PROPERTY</th>
<th>TEST METHOD</th>
<th>PROPERTY VALUE</th>
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</thead>
<tbody>
<tr>
<td>Shore A Hardness</td>
<td>ASTM D2240</td>
<td>85 or greater</td>
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<tr>
<td>Tensile Strength</td>
<td>ASTM D638</td>
<td>500 psi</td>
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<tr>
<td>Adhesion to Concrete</td>
<td>ASTM D4541</td>
<td>285 psi</td>
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<td>Solids Content</td>
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<td>100%</td>
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<tr>
<td>Acceptable for use in USDA regulated facilities</td>
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</table>
C. Product: Subject to compliance with requirements, utilize products manufactured by Metzger/McGuire Co., Concord, NH (800)223-6680.
   1. Joint filler for all areas with operating temperatures of 40° or higher shall be "MM-80/MM-80P Semi-Rigid Epoxy Joint Filler".

D. Substitutions not permitted.

2.02 ACCESSORIES
A. Silica sand may be used at contractor’s option to choke-off shrinkage cracks beneath filler. Silica must be dry, bagged, of 20 to 40 grit.
B. The use of compressible foam backer rod is strictly prohibited in ALL saw-cut control joints.
C. Compressible foam backer rod may be used in through slab construction joints only but MUST be placed at a minimum depth of 2”. No other use of backer rod will be allowed. Refer to installation section and product technical data for additional information.
D. Joint Cleanout and preparation should be done utilizing dust-free, diamond blade equipped cleanout saws such as those manufactured by Sawtec/US Surface Preparation, (800)624-7832, Joe Due Equipment, (877)563-3383, or equivalent.

PART 3 – EXECUTION
3.01 PROJECT CONDITIONS
A. Work area should be free of obstructions and other trades.
B. Slab should be visibly dry and all floor scrubbing/washing activities should be suspended at least 48 hours prior to filler installation.

3.02 TIMING OF INSTALLATION
A. The American Concrete Institute (ACI) recommends that filling be deferred as long as possible to allow for maximum slab shrinkage and joint widening. Deferring filler installation as long as possible will help to minimize the occurrence of joint filler separation due to excessive joint widening during concrete cure (and shrinkage).
B. For ambient temperatures a 90-120 day slab cure is advisable. Deferring filling until after facility is under permanent temperature control is best, if possible.

3.03 EXAMINATION OF CONDITIONS
A. It is the responsibility of the installer to inspect project and joint conditions and notify on-site management in writing of any deficiencies that might adversely affect the quality or durability of the work performed or his contract price.
B. Start of work by the installer implies acceptance of conditions.

3.04 PRE-INSTALLATION SAMPLE
A. Before start of actual work the applicator shall install samples to demonstrate his intended procedures and finished product. Sample shall include at least 25’ each of both contraction and construction joints and be performed in the presence of on-site management.
B. If procedures and finished product are approved they will be considered a standard for the entire project.

3.05 JOINT PREPARATION
A. Prior to installation of joint fillers, all saw-cut joints shall be thoroughly cleaned to their full original depth. Typically 1 ¼ - 1 ½” in a 6” slab, 2” in an 8” slab. Where the original saw-cut depth exceeds 2”, joint preparation and filling must be performed to a minimum depth of 2”.

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B. Construction (formed, through slab) joints that are not saw-cut shall be cleaned to a minimum depth of 2”.

C. Preparation shall be performed using a vacuum-equipped saw that will reach the base of the saw-cut joint or to a depth of 2” in the case of through slab construction joints, and shall be used in a manner that takes both joint walls back to bare concrete, removing all saw laitance, curing compounds, sealers, debris, etc. Joint cleaning may be performed using two cleaning passes, one along each side of the joint. Or, if only one cleaning pass is performed, the diamond blade width must be slightly wider than the joint to be cleaned.

D. Where joints have minor edge chips, said chips shall be “squared off” and filled along with the joint itself.

E. Keep prepared joints free of dust, moisture, and jobsite debris prior to filling.

3.06 CHOKING-OFF JOINT BOTTOM

A. The installer may, at his option, use a maximum of 1/4” of silica sand placed at the bottom of the saw-cut joints to prevent filler run-thru into the shrinkage crack.

B. Compressible backer rod is prohibited in saw-cut joints unless they exceed 2” deep.

C. Compressible backer rod may be used in through-slab (non-sawn) construction joints but must be recessed at least 2” below the slab surface.

D. The use of backer rod in any saw-cut joints less than 2” deep will result in the rejection of all saw-cut joints work.

3.07 JOINT FILLER INSTALLATION

A. Installation of MM80/MM-80P Semi-Rigid Epoxy Joint Filler:
   1. Pre-mix Part “A” component to re-distribute any settlement that may have occurred during shipping or storage.
   2. Combine Part “A” with “B” per manufacturer’s instructions and dispense through bulk caulking guns or dual-feed power pump.
   3. Install using a two pass method per manufacturer instructions, with second pass overfilled (crowned).
   4. If stain from overfill will be objectionable, apply Metzger/McGuire SPF (Stain Preventing Film) prior to joint cleanout and filler placement. For additional information contact Metzger/McGuire at (800)223-6680.
   5. After MM-80/MM-80P has fully cured, razor off excess to leave a flush filler profile. The overfill should be heated just prior to shaving to provide a smooth, flush filler profile (see manufacturer instructions on heating methods).

3.08 JOINT FILLER DEFICIENCIES:

A. Installer is advised that significant deficiencies in workmanship, including less than proper filler depth, inadequate joint cleaning, concave filler profile, etc., shall be removed and properly replaced.

B. Joint filler installed to depths less than specified in this Section shall be removed and replaced at no additional cost to the General Contractor or Owner. As each sector of work is completed the general contractor, using a 1/8” drill bit, shall drill through the filler to verify filler depth. GC shall test drill at an approximate rate of 1 core every 500 lineal feet. Location of core and filler depth found shall be recorded and provided to the owner prior to project completion.
3.09 JOINT FILLER SEPARATION:

A. Joint filler separation, both adhesive (leap-frog side to side) and cohesive, occurs as a result of concrete shrinkage and subsequent joint opening in excess of the fillers ability to laterally expand. In the event joint separation voids are 1/32 (credit card width) or greater, correction by refilling should be required.

B. The existence of joint filler separation as outlined does not mean that joint filler deficiencies exist as a result of the applicators initial installation. As outlined in 4.02.A above, joint filler separation is specifically related to concrete shrinkage and joint widening, all of which are conditions outside the control of the joint filler applicator.

C. For a further discussion and information pertaining to joint filler separation, please refer to Metzger/McGuire Technical Bulletin, T11.

END OF SECTION
SECTION 03 3500
CONCRETE FLOOR FINISHING

PART 1 GENERAL

1.01 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY
A. This Section includes the following:
   1. Finishing slabs-on-grade, monolithic floor slabs, and separate floor toppings.
   2. Surface treatment with concrete hardener, sealer, and slip resistant coatings.

B. Related Sections include the following:
   1. Division 3 Section "Cast-in-Place Concrete" for concrete slab construction and finish and concrete topping slabs.
   2. Division 3 Section "Cement-Based Underlayment" for polymer-modified, cementitious, self-leveling underlayments.
   3. Division 5 Section "Expansion Joint Assemblies"
   4. Division 7 Section "Joint Sealers"
   5. Division 9 Section "Ceramic Tile" for medium-set and thickset mortar beds for tile.

1.03 REFERENCES
A. The latest adopted edition of all standards referenced in this section shall apply, unless noted otherwise:
   1. ACI 301 - Specifications for Structural Concrete for Buildings
   2. ACI 302 - Guide for Concrete Floor and Slab Construction
   3. ASTM E1155 - Determining Floor Flatness and Levelness Using the F-Number System (Inch-Pound Units).

1.04 QUALITY ASSURANCE
A. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.

B. Submittals
   1. Product Data: Submit manufacturer's data showing compliance with the specifications for the following products:
      a. Sealer
   2. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Meetings."
   3. The Contractor shall call a meeting to review the detailed requirements for floor construction, including the concrete placing techniques, finishing techniques, curing techniques, and the application of floor finishing materials. All contractors involved in the floor installation shall attend the conference.
   4. The Contractor shall notify the Owner, Architect and the Structural Engineer at least 10 business days prior to the scheduled date of the conference.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Deliver materials in original packages and containers, with seals unbroken, bearing manufacturer's labels indicating brand name and directions for storage, mixing with other components, and application.
B. Store materials to comply with manufacturer's written instructions to prevent deterioration from moisture or other detrimental effects.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

B. RELATED MATERIALS

C. Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, per ASTM D 2240.


E. Joint Sealant: For sealing control joints and construction joints in parking decks. "Iso-Flex 880 GB" (self leveling) or "Iso-Flex 881" (non-sag) polyurethane type by the H.S. Peterson Corporation or approved equal. Provide all primers, cleaners and materials required by the manufacturer for the installation of sealant.

F. Sawcut joint filler: Euco 700 epoxy by The Euclid Chemical Company, or approved equal.

PART 3 EXECUTION

3.01 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Concrete slabs shall be finished as specified below, within the tolerances specified elsewhere in this Section.

1. Highway straightedges are recommended for use in lieu of bullfloats for all slab placement and finishing operations.

2. Screeding: Immediately after placing, slab shall be vibrated and struck off true by double screeding to the required level, at or below the elevation or grade of the finished slabs as indicated on the Drawings. Vibrators shall not be used to spread the concrete. When camber is indicated for slabs supported on formwork, screed to the required camber. Fixed screed guides are recommended where specified surface tolerance exceeds FF25/FL20.

3. Floating: Immediately after screeding, before any excess bleed water is present on the surface, float the surface using long-handled bull floats or darbies.

4. Straightedging: Immediately after screeding and before excess bleed water is present on the surface, straighten the surface using a highway straightedge.

5. Edging and jointing, where required, shall be done after bleed water has evaporated and before further finishing.

6. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.

7. Apply float finish to surfaces to receive trowel finish and to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

8. Locations: All concrete surfaces under waterproofing membrane, setting beds for brick, mud-set tile, pavers, or terrazzo, and noncomposite topping slabs.

C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

2. Locations: Exposed concrete floors not otherwise specified, concrete surfaces under carpets, vinyl tile, thin set tile, wood flooring, elastomeric coatings, and painted concrete floors, and roof slabs that are future floors.

D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces where ceramic or quarry tile is to be installed by either thickset or thin-set method. While concrete is still plastic, slightly scarify surface with a fine broom.
1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

F. Heavy Broom Finish: Apply a heavy broom finish to concrete ramps steeper than 7 percent slope, loading ramps, and other locations where noted on the Drawings.
1. Finishing: As soon as the surface of the concrete is sufficiently stiffened, wood float the surface to a true plane with no coarse aggregate visible. Ramp surfaces shall be cross jointed with a Goldblatt Groover (Model #06-314-M7) or equal jointing tool for the entire width of the ramps. Space cross joints at 6” intervals. The concrete surfaces between grooves shall be brushed with a stiff fiber brush to produce uniformly striated surfaces parallel with cross jointing. Grooved joints and brushed finish texture shall be approved by the Architect.

G. FINISHING CONCRETE TOPPING SLABS

H. Place concrete floor topping continuously in a single layer, tamping and consolidating to achieve tight contact with bonding surface. Do not permit cold joints or seams to develop within pour strip.
1. Screed surface with a straightedge and strike off to correct elevations.
2. Slope surfaces uniformly where indicated.
3. Begin initial floating using bull floats to form a uniform and open-textured surface plane free of humps or hollows.

I. Finishing: Consolidate surface with power-driven floats as soon as concrete floor topping can support equipment and operator. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until concrete floor topping surface has a uniform, smooth, granular texture.
1. Hard Trowel Finish: After floating surface, apply first trowel finish and consolidate concrete floor topping by power-driven trowel without allowing blisters to develop. Continue troweling passes and restraighten until surface is smooth and uniform in texture.
   a. Finish surfaces to specified overall values of flatness, F(F) 25; and levelness, F(L) 20; with minimum local values of flatness, F(F) 17; and levelness, F(L) 15, and notify independent testing agency to permit measurement within 24 hours according to ASTM E 1155 for a randomly trafficked floor surface.
   b. Finish and measure surface so gap at any point between surface and an unleveled freestanding 10-foot-long straightedge, resting on 2 high spots and placed anywhere on the surface, does not exceed 1/4 inch.

2. CONTROL JOINTS

J. Saw-cut Control Joints with Soff-Cut saw: After completion of finishing operation, cut control joints using a "Soff-Cut" brand electric saw along straight lines where called for on the Drawings. Follow manufacturer's instructions in using "Soff-Cut" saw. Sawcutting shall be done...
within 2 hours after the completion of finishing, but not so soon as to cause raveling of the joint. Cut to depth indicated on the Drawings.

1. After completion of finishing operations, cut control joints along straight lines where called for on the Drawings. Saw cutting shall be done within 4 hours after the completion of finishing, but not so soon to cause raveling of the joint. Cut to the depth indicated on the Drawings.

K. Form joints in concrete floor topping over control joints in base slabs, unless otherwise indicated.

L. Construct control joints for a combined depth equal to topping thickness and not less than one-fourth of base-slab thickness.

M. Construct control joints for a depth equal to one-half of concrete floor topping thickness, but not less than 1/2 inch deep.

3.02 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions.

1. Defer joint filling until concrete has aged at least six month(s). Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

1. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

3.03 CONCRETE FINISH MEASUREMENT AND TOLERANCES

1. Two Tiered Measurement Standard: Each floor test section and the overall floor area shall conform to the two-tiered measurement standard as specified herein.

2. Minimum Local Value: The minimum local FF/FL values represent the absolute minimum surface profile that will be acceptable for any one test sample (line of measurements) anywhere within the test area.

3. Specified Overall Value: The specified overall FF/FL values represent the minimum values acceptable for individual floor sections as well as the floor as a whole.

B. Floor Test Sections

1. A floor test section is defined as the smaller of the following areas:
   a. The area bounded by column and/or wall lines.
   b. The area bounded by construction and/or control joint lines.
   c. Any combination of column lines and/or control joint lines.

2. Test sample measurement lines within each test section shall be multidirectional along two orthogonal lines, as defined by ASTM E1155, at a spacing to be determined by the Owner's testing agency.

3. The precise layout of each test section shall be determined by the Owner's testing agency.

C. Concrete Floor Finish Tolerance

1. The following values apply before removal of shores. Levelness values (FL) do not apply to intentionally sloped or cambered areas, nor to slabs poured on metal deck or precast concrete.

   a. Exposed or vinyl tiled floors, unless otherwise specified:
      - Overall Value: FF25/FL20
      - Minimum Local Value: FF17/FL15

   b. Floors to be covered with carpet or thin-set tile:
      - Overall Value: FF20/FL20
      - Minimum Local Value: FF15/FL15

   c. Recessed floors and roof slabs:
D. Floor Elevation Tolerance Envelope:
1. The acceptable tolerance envelope for absolute elevation of any point on the slab surface, with respect to the elevation shown on the Drawings, is as follows:
   a. Slab-on-Grade Construction: +/- 3/4"
   b. Top surfaces of formed slabs measured prior to removal of supporting shores: +/- 3/4"
   c. Top surfaces of all other slabs: +/- 3/4"
   d. Slabs specified to slope shall have a tolerance from the specified slope of 3/8" in 10'-0" at any point, up to 3/4" from theoretical elevation at any point.

3.04 FIELD QUALITY CONTROL
A. Concrete Floor Flatness and Levelness:
2. Time Period for Measuring and Reporting: All measurements shall be made by the testing laboratory or designated agency before the end of the next workday after the completion of finishing operations. For structural elevated floors, measurement shall also be made prior to removal of forms and shores. The Contractor shall be notified immediately after the measurements of any section are complete, and a written report of the floor measurement results shall be submitted within 72 hours after finishing operations are complete. The Contractor shall take immediate action to correct any work that is outside the specified tolerances.
3. Measuring Equipment: The concrete surface profile shall be measured using equipment manufactured for the purpose, such as the Dipstick Floor Profiler, as manufactured by the Edward W. Face Company, Norfolk, Virginia, or by other methods specified in ASTM E1155.
4. Floor Test Sections:
   a. A floor test section is defined as the smaller of the following areas:
      1) The area bounded by column and/or wall lines.
      2) The area bounded by construction and/or control joint lines.
      3) Any combination of column lines and/or control joint lines.
   b. Test sample measurement lines within each test section shall be multidirectional along two orthogonal lines.
   c. The precise layout of each test section shall be determined by the testing agency and shall be submitted for the Architect's review and approval.

3.05 REPAIRS
A. Defective Topping: Repair and patch defective concrete floor topping areas, including areas that have not bonded to concrete substrate.
B. Remedial Measures for Slab Finish Construction not Meeting Specified Tolerances:
1. Application of Remedial Measures. Remedial measures specified herein are required whenever either or both of the following occur:
   a. The composite overall values of flatness or levelness of any test section or the entire floor installation measure less than specified values.
   b. Any individual test sample (line of measurements) measures less than the specified absolute minimum flatness or levelness value.
2. Modification of Existing Surface:
   a. If, in the opinion of the Architect or Owner's representative, all or any portion of the substandard work can be repaired without sacrifice to the appearance or serviceability of the area, the Contractor shall immediately undertake the approved repair method.
b. The Contractor shall submit for review and approval a detailed work plan of the proposed repair showing areas to be repaired, method of repair, and time required to make the repair.

c. Repair method(s), at the sole discretion of the Architect or Owner’s Representative, may include grinding (floor stoning), planing, retopping with specified floor leveling compound, or any combination of the above.

d. All repair work shall be performed at no additional cost to the Owner and with no extension to the construction schedule.

3. Removal and Replacement:

   a. If, in the opinion of the Architect/Engineer or Owner’s Representative, all or any portion of the substandard work cannot be satisfactorily repaired without sacrifice to the appearance or serviceability of the area, the Contractor shall remove and replace the defective work as directed.

   b. Replacement sections may be retested for compliance at the discretion of the Architect/Engineer or Owner’s Representative.

   c. All replacement work shall be performed at no additional cost to the Owner and with no extension to the construction schedule.

END OF SECTION
SECTION 03 3513
HIGH TOLERANCE CONCRETE FLOOR FINISHING

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Finishing interior Studio concrete floors.

1.02 RELATED SECTIONS
A. Section 03 3000 - Cast-in-Place Concrete.
B. Section 03 3500 – Concrete Floor Finishing: Finishing requirements for non-Studio concrete floors.
C. Section 03 3600 - Concrete Floor Sealer.

1.03 REFERENCE STANDARDS
A. ACI 302 1R - Guide for Concrete Floor and Slab Construction
B. ACI 304 -Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete
C. ASTM E1 155 - Standard Test Method for Determining Floor Flatness and Levelness Using the F-Number System

1.04 DELIVERY OF MATERIALS
A. Furnish materials in manufacturer’s packaging, complete with application instructions

PART 2 - PRODUCTS

2.01 MATERIALS
A. Refer to Section 03 3000 – Cast In Place Concrete for curing agent materials.
B. Refer to Section 03 6000 – Concrete Floor Sealer for floor sealing materials.

PART 3 - EXECUTION

3.01 FLOOR FINISHING - GENERAL
A. Finish concrete floor surfaces in accordance with applicable portions of ACI 302 1R and ACI 304, unless otherwise specified.
B. Uniformly spread, screed, and float concrete. Do not use grate tampers or mesh rollers. Do not spread concrete by vibration.

3.02 FLATNESS AND LEVELNESS OF FLOORS
A. For Studio floor areas as designated on the Drawings, floor flatness/levelness shall conform to minimum Overall F-Numbers F\textsubscript{50}/F\textsubscript{35} for composite of all measured values, and minimum Local F-Numbers F\textsubscript{35}/F\textsubscript{20} for any individual floor section,
B. Testing will be performed by a testing agency under provisions of Section 01 4000. Check all concrete floor areas for conformance with the F-Number specification using ASTM E1 155 test methods.
   1. Review test method and test paths with Architect prior to concrete pour,
   2. In the Studio area, measurements shall be taken within 4 inches of construction joints in lieu of 12 inches required by ASTM E1 155
   3. Tests will be performed daily during concrete floor construction
4. Notify Architect if F-Numbers fall below the minimum values
5. Remedial measures may be required if:
   a. Any individual floor section measures less than either of the specified Local F-Numbers.
   b. After completion, the entire floor installation measures less than either of the specified Overall F-Numbers.
   c. Other defects are discovered not revealed by test results, such as surface roughness in small areas.
6. Where possible, place a non-critical test section of floor for testing before proceeding with subsequent sections. Refine construction methods and procedures if required to meet specifications.

3.03 REMEDIAL MEASURES

A. Surfaces with errors exceeding flatness and levelness tolerances of this Section, and other defects not related to these tolerances, may be repaired provided the strength, smoothness or appearance is not adversely affected. High spots may be removed with a terrazzo grinder.

B. In the Studio area, grind all construction joints to a smooth surface In addition, allow 1 hour of grinding per 750 sq ft of floor area for remedial work required and directed by Architect.

C. Where slab will not receive applied flooring, fill all saw-joints with patching compound.

D. Harden and seal approved repaired areas in spaces where hardener/sealer treatment is required.

3.04 SURFACE FINISHES

A. Steel trowel all floor surfaces.

B. Steel trowel surfaces which will receive carpeting and resilient flooring.

C. Steel trowel and fine broom surfaces which will receive thin set tile or pavers.

3.05 CURING PROCEDURES

A. Refer to Section 03 3000 – Cast In Place Concrete for concrete curing procedures.

3.06 PROTECTION AFTER INSTALLATION

A. Protect finished surfaces from dirt, wear, and damage.

B. Secure heavy sheet goods or similar protective materials in place, in areas subject to foot traffic.

C. Lay planking or similar rigid materials in place, in areas subject to movement of heavy objects, or where storage of products will occur

END OF SECTION
SECTION 03 3600
CONCRETE FLOOR SEALER

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Concrete densifier and floor sealer.

1.02 RELATED SECTIONS
A. Section 03300 - Cast-in-Place Concrete.

1.03 SUBMITTALS
A. Comply with Section 01 3000 – Administrative Requirements.
B. Product Data: Submit manufacturer's product data, including surface preparation and application instructions.
C. Maintenance Instructions: Submit manufacturer's maintenance and cleaning instructions.

1.04 QUALITY ASSURANCE
A. Manufacturer's Qualifications: ISO 9001/9002 registered or provide proof of documented quality assurance system. Quality assurance system shall be registered by independent registrar accredited by ANSI Registrar Accreditation Board (ANSI-RAB) or by another internationally recognized body.
B. Installer's Qualifications:
   1. Successful experience in application of similar concrete floor sealers.
   2. Employ persons trained for application of concrete floor sealers.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying manufacturer and product name.
B. Storage: Store materials in a clean, dry area indoors in accordance with manufacturer's instructions. Keep containers sealed until ready for use. Keep away from ignition sources. Do not allow to freeze.
C. Handling: Protect materials during handling and application to prevent damage or contamination.

1.06 ENVIRONMENTAL REQUIREMENTS
A. Do not apply concrete floor sealer when air or surface temperature is below 40 degrees F or above 135 degrees.
B. Exterior Surfaces: Do not apply materials in wet weather.

1.07 SEQUENCING
A. Prepare surface and apply concrete floor sealer after interior finish work is completed and before baseboards are installed.

PART 2 PRODUCTS
2.01 MANUFACTURERS
B. Substitutions: Permitted under provisions of Section 01 6000.

2.02 CONCRETE FLOOR SEALER

A. Concrete Sealer: Euco Diamond Hard liquid densifier and sealer.
   1. Type: Clear, water-based, blend of silicate polymers.
   2. Compliance:
      a. Meets maximum VOC content of 400 g/L in accordance with EPA 40 CFR Part 59, Table 1, Subpart D for concrete protective coatings.
      b. Meets California and New Jersey air quality standards.
   3. VOC Content: 0 g/L.
   4. USDA approved.
   5. Ultraviolet resistant.
   8. No odor.

B. Substitutions: Permitted under provisions of Section 01600.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine surfaces to receive concrete floor sealer. Notify Architect if surfaces are not acceptable. Do not begin surface preparation or application until unacceptable conditions have been corrected.

3.02 SURFACE PREPARATION

A. Protection:
   1. Protect walls and surrounding surfaces not to receive concrete sealer.
   2. Do not allow sealer to come in contact with wood, glass or metal surfaces.

B. Prepare concrete surface in accordance with manufacturer's instructions.

C. Ensure concrete is a minimum of 7 days old. Insure that new concrete has cured as specified in Section 03 3000.

D. Ensure concrete surface is clean, dry, structurally sound, and free from dirt, dust, oil, grease, solvents, paint, wax, asphalt, concrete curing compounds, sealing compounds, surface hardeners, bond breakers, adhesive residue, and other surface contaminants.

E. Do not acid wash or use heavy alkali cleaners.

3.03 APPLICATION

A. Concrete Floor Sealer: Apply concrete floor sealer over concrete floor in accordance with manufacturer's instructions.

B. Keep material containers closed when not in use to avoid contamination.

C. Do not use a curing compound.

D. Do not dilute sealer.

3.04 PROTECTION

A. Protect concrete surfaces from foot traffic for a minimum of 24 hours.

B. Avoid washing concrete surfaces for a minimum of 48 hours.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Water and Detergent cleaning of masonry surfaces.
   B. Repointing mortar joints.
   C. Repair of damaged masonry.

1.02 GENERAL REQUIREMENTS
   A. Masonry cleaning:
      1. Cleaning shall be limited to the gentlest means possible, using water or detergent methods.
      2. Test areas in inconspicuous locations.
      3. Tests must be approved by Midwestern State University Project Representative.
      4. Low pressure wash no greater than 400 psi unless authorized by Midwestern State University Project Representative.
      5. In no instance shall sandblasting be acceptable.
      6. Compliance with the Office of Environmental Health and Safety is required as follows:
         a. Discharges from pressure washing shall not be allowed to enter a storm sewer or waterway. Vacuum the water for disposal off-site or berm the process water and allow it to evaporate. If the rinseate only contains water and dirt or sediment, it may be spread on the ground only with prior written permission from Midwestern State University
   B. Masonry restoration: Historic buildings’ grout re-pointing shall comply with the Midwestern State University campus historic restoration recommendations. Extreme care shall be taken during the repointing process. Use of hand tools is required

1.02 RELATED REQUIREMENTS
   A. Section 04 0513 - Masonry Mortaring and Grouting.

1.03 REFERENCE STANDARDS
   A. ACI 530/530.1/ERTA - Building Code Requirements and Specification for Masonry Structures and Related Commentaries; American Concrete Institute International; current edition.
   B. The Secretary of the U.S. Department of the Interior’s Standards for Rehabilitation.
   D. Clear Water Repellent Treatments for Concrete Masonry, Masonry Institute of America.
   E. Practical Building Conservation, 4 vols, John Asbury.

1.04 ADMINISTRATIVE REQUIREMENTS
   A. Preinstallation Meeting: Convene one week prior to commencing work of this section.
      1. Require attendance of parties directly affecting work of this section.
      2. Review conditions of installation, installation procedures, and coordination with related work.
   B. Scheduling:
      1. Perform cleaning and washing of masonry between the hours of 7 am to 11 pm only.

1.05 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on cleaning compounds.
C. Samples: Submit four samples of decorative block, face brick, and stone units to illustrate matching color, texture and extremes of color range.
D. Manufacturer's Instructions: For cleaning materials, indicate special procedures, conditions requiring special attention.

1.06 QUALITY ASSURANCE
A. Comply with provisions of ACI 530/530.1/ERTA, except where exceeded by requirements of the contract documents.

1.07 MOCK-UP
A. Restore and repoint an existing masonry wall area sized 8 feet long by 6 feet high; include in mock-up area instances of mortar, accessories, wall openings, and flashings.
B. Clean a 10 ft by 10 ft panel of wall to determine extent of cleaning.
   1. Repeat, using different cleaning methods for up to three different panels.
C. Locate where directed.
D. Acceptable panel and procedures employed will become the standard for work of this section.
E. Mock-up may remain as part of the Work, following acceptance.

1.08 DELIVERY, STORAGE, AND HANDLING
A. Deliver masonry neatly stacked and tied on pallets. Store clear of ground with adequate waterproof covering.

1.09 FIELD CONDITIONS
A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530/530.1/ERTA or applicable building code, whichever is more stringent.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Restoration and Cleaning Detergents:
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 CLEANING MATERIALS
A. Cleaning Agent: Detergent type.
B. Acid Solution: Clean, stain free, commercial hydrochloric (muriatic) acid, mixed one part to 10 parts of potable water.

2.03 MORTAR MATERIALS
A. Conform to requirements of Section 04 0513.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that surfaces to be cleaned are ready for work of this section.

3.02 PREPARATION
A. Protect surrounding elements from damage due to restoration procedures.
B. Carefully remove and store removable items located in areas to be restored, including fixtures, fittings, finish hardware, and accessories; reinstall upon completion.
3.03 REBUILDING
A. Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.
B. Support structure as necessary in advance of cutting out units.
C. Cut away loose or unsound adjoining masonry as directed.
D. Build in new units following procedures for new work specified in other section(s).
E. Mortar Mix: Colored and proportioned to match existing work.
F. Ensure that anchors are correctly located and built in.
G. Install built in masonry work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

3.04 REPOINTING
A. Masonry restoration: Historic buildings' grout re-pointing shall comply with the Midwestern State University campus historic restoration recommendations. Extreme care shall be taken during the repointing process. Use of hand tools is required
B. Perform repointing prior to cleaning masonry surfaces.
C. Cut out loose or disintegrated mortar in joints to minimum 1/2 inch depth or until sound mortar is reached.
D. Use power tools only after test cuts determine no damage to masonry units will result.
E. Do not damage masonry units.
F. When cutting is complete, remove dust and loose material by brushing.
G. Premoisten joint and apply mortar. Pack tightly in maximum 1/4 inch layers. Form a smooth, compact concave joint to match existing.
H. Moist cure for 72 hours.

3.05 CLEANING EXISTING MASONRY
A. Cleaning Detergent: Brush clean masonry surfaces with detergent type cleaning agent in accordance with the manufacturer's instructions. Saturate masonry with clean water and flush loose mortar and dirt.
B. High Pressure Cold Water: Cold water blast masonry surfaces, providing uniform finish. Use water pressures that do not damage masonry.

3.06 CLEANING NEW MASONRY
A. Verify mortar is fully set and cured.
B. Clean surfaces and remove large particles with wood scrapers, brass or nylon wire brushes.
C. Scrub walls with detergent type cleaning agent solution using stiff brush. Thoroughly rinse and wash off cleaning solution, dirt and mortar crumbs using clean, pressurized water.

D. Use acid solution mixed with water in accordance with manufacturer's instructions. Apply acid solution and scrub masonry with stiff fiber brushes. Do not scrub the mortar joints.

E. Protect area below cleaning operation and keep masonry soaked with water and flushed free of acid and dissolved mortar continuously for duration of cleaning.

F. Before solution dries, rinse and remove acid solution and dissolved mortar, using clean, pressurized water.

3.07 RESTORATION CLEANING

A. Clean surfaces and remove large particles with wood scrapers or non-ferrous wire brush.

B. Spray coat masonry with restoration cleaner, mixed into solution in accordance with manufacturer's instructions.

C. Provide a second application if required to match mock-up area.

D. Allow sufficient time for solution to remain on masonry and agitate with soft fiber brush or sponge.

E. Rinse from the bottom up with potable water applied at 400 psi and at a rate of 4 gal/min.

3.08 AGING

A. Rub in new masonry work to match, as close as possible, adjacent original work.

3.09 CLEANING

A. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.

B. Remove excess mortar, smears, and droppings as work proceeds and upon completion.

C. Clean surrounding surfaces.

END OF SECTION
SECTION 04 05 13

MASONRY MORTAR AND GROUT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Mortar for masonry.
B. Grout for masonry.

1.02 RELATED SECTIONS

A. Section 04 7200 - Cast Stone.
B. Section 04 2200 - Reinforced Unit Masonry Assemblies: Installation of mortar.
C. Section 04 2113.13 - Brick Veneer Masonry
D. Section 08 1113 - Steel Doors and Frames: Grouting steel door frames installed in masonry.

1.03 REFERENCES

A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements For Masonry Structures; American Concrete Institute International; current edition.
B. ACI 530.1/ASCE 6/TMS 602 - Specification for Masonry Structures; American Concrete Institute International; current edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Include design mix and indicate that the Property specification of ASTM C 270 is to be used. Also include required environmental conditions and admixture limitations.
C. Samples: Submit one sample of each available color of mortar, illustrating mortar color and color range from manufacturer’s complete line of available colors. Architect will make an initial selection of mortar color for incorporation into the approval mock-up specified in section 01420.

D. Reports: Submit reports on mortar indicating conformance of component mortar materials to requirements of ASTM C 270 and test and evaluation reports per ASTM C 780.

E. Reports: Submit reports on grout indicating conformance of component grout materials to requirements of ASTM C 476 and test and evaluation reports to requirements of ASTM C 1019.

F. Manufacturer’s Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Maintain packaged materials clean, dry, and protected against dampness, freezing, and foreign matter.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements: Comply with recommendations of IMIAWC (CW).

B. Hot Weather Requirements: Comply with IMIAWC (HW).

PART 2 PRODUCTS

2.01 MATERIALS

A. Portland Cement: ASTM C 150, Type I – Normal. Standard gray color and white color are required.

B. Hydrated Lime: ASTM C 207, Type S.

C. Mortar Aggregate: ASTM C 144.


E. Water: Clean and potable.

F. Accelerating Admixture: Nonchloride type for use in cold weather.

G. Moisture-Resistant Admixture: Water repellent compound designed to reduce capillarity.

H. Bonding Agent: Latex type.

2.02 MORTAR MIXES

   1. Structural engineered masonry: Type S.
   2. Masonry below grade and in contact with earth: Type S.
   3. Exterior, loadbearing masonry: Type S.
   4. Exterior, non-loadbearing masonry: Type N.
   5. Interior, loadbearing masonry: Type N.
   6. Interior, non-loadbearing masonry: Type N.
   7. Pointing mortar: Type N with maximum 2 percent ammonium stearate or calcium stearate per cement weight.

B. Mortar Color: Coordinate mortar color with the Midwestern State University representative.
2.03 MORTAR MIXING
   A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C 270 and in quantities needed for immediate use.
   B. Maintain sand uniformly damp immediately before the mixing process.
   C. Do not use anti-freeze compounds to lower the freezing point of mortar.
   D. If water is lost by evaporation, re-temper only within two hours of mixing.
   E. Use mortar within two hours after mixing at temperatures of 90 degrees F, or two-and-one-half hours at temperatures under 40 degrees F.

2.04 GROUT MIXES
   A. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; provide premixed type in accordance with ASTM C 94/C 94M.
      1. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
      2. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
   B. Engineered Masonry: Course grout shall conform to ASTM C476, with a maximum aggregate size of ½ inch and a minimum compressive strength equal to the specified, f'm, but not less than 2,000 psi. Course aggregate shall be placed in accordance with ACI 530.01.3.5.

2.05 GROUT MIXING
   A. Mix grout in accordance with ASTM C 94/C 94M.
   B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C 476 for fine and coarse grout.
   C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.

PART 3 EXECUTION

3.01 PREPARATION
   A. Apply bonding agent to existing concrete surfaces.
   B. Plug clean-out holes for grouted masonry with block masonry units. Brace masonry to resist wet grout pressure.

3.02 INSTALLATION
   A. Install mortar and grout to requirements of section(s) in which masonry is specified.
   B. Work grout into masonry cores and cavities to eliminate voids.
   C. Do not install grout in lifts greater than 16 inches without consolidating grout by rodding.
   D. Do not displace reinforcement while placing grout.
   E. Remove excess mortar from grout spaces.

3.03 GROUTING
   A. Use low-lift grouting techniques.
   B. Low-Lift Grouting:
      1. Limit height of pours to 12 inches.
      2. Limit height of masonry to 16 inches above each pour.
      3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

3.04 FIELD QUALITY CONTROL

A. An independent testing agency will perform field tests, in accordance with provisions of Section 01 40 00.

B. Test and evaluate mortar in accordance with ASTM C 780 procedures.
   1. Test with same frequency as specified for masonry units.

C. Test and evaluate grout in accordance with ASTM C 1019 procedures.
   1. Test with same frequency as specified for masonry units.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES

A. Clay Facing Brick.
B. Mortar and Grout.
C. Reinforcement and Anchorage.
D. Flashings.
E. Installation of Lintels.
F. Accessories.

1.02 RELATED SECTIONS

A. Section 04 0513 – Masonry Mortar and Grout.
B. Section 04 2200 – Reinforced Unit Masonry Assemblies.
C. Section 05 5500 - Metal Fabrications: Loose steel lintels.
D. Section 07 6200 - Sheet Metal Flashing and Trim: Through-wall masonry flashings.
E. Section 07 9005 - Joint Sealers: Backing rod and sealant at control and expansion joints.

1.03 REFERENCES

A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures; American Concrete Institute International; 2005.
B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2005.
E. ASTM C 216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale); 2005a.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data for masonry units and fabricated wire reinforcement.
C. Samples: Submit ten samples of facing brick and concrete masonry units to illustrate color, texture, and extremes of color range.
D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.

1.06 MOCK-UP
A. Construct a masonry wall as a mock-up panel sized 8 feet long by 6 feet high, which includes mortar and accessories, structural backup, related masonry components and flashings.
   1. Before ordering brick, contractor to allow a minimum six weeks for review, rework and approval.

B. Locate where directed.

C. Mock-up may not remain as part of the Work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.08 ENVIRONMENTAL REQUIREMENTS

A. Maintain materials and surrounding air temperature to minimum 40 degrees F prior to, during, and 48 hours after completion of masonry work.

B. Maintain materials and surrounding air temperature to maximum 90 degrees F prior to, during, and 48 hours after completion of masonry work.

1.09 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.

B. Provide 100 of each size, color, and type of face brick units for Owner's use in maintenance of project.

PART 2 PRODUCTS

2.01 BRICK UNITS

A. Clay Facing Brick Manufacturer:
   2. Substitutions: Not permitted.

B. Clay Facing Brick: ASTM C 216, Type FBS, Grade SW.
   2. Blend:
      a. Driftwood Blend 40%.
      b. Terracotta Blend 40%
      c. Cimarron Blend 10%
      d. Cameo Blend 5%
      e. Old Rose Blend 5%
   3. Special shapes: Molded units as required by conditions indicated, unless standard units can be sawn to produce equivalent effect.

C. Facing Brick matching requirement: Match facing brick of connecting existing building.

2.03 MORTAR AND GROUT MATERIALS

A. Mortar and Grout: As specified in Section 04 0513.

2.04 REINFORCEMENT AND ANCHORAGE

A. Veneer Anchorage
   1. Wall Ties for anchoring veneer to steel studs: Provide galvanized, 12 gage, DW-10HS - Anchors, with ¼ inch wire, manufactured by Hohmann and Barnard.
   2. Substitutions not permitted.

2.05 FLASHINGS

A. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet; 0.030 inch total
thickness; with cross-linked polyethylene top and bottom surfaces.


C. Lap Sealant: Butyl type as specified in Section 07 9005.

2.06 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
   1. Manufacturers:
      d. Substitutions: See Section 01 2500 - Product Requirements.

B. Joint Filler: Closed cell polyvinyl chloride; oversized 50 percent to joint width; maximum lengths available.
   1. Manufacturers:
      d. Substitutions: See Section 01 2500- Product Requirements.

C. Weeps: Polyethylene tubing.
   1. Manufacturers:
      d. Substitutions: See Section 01 2500- Product Requirements.

D. Cavity Vents: Polyester mesh.
   1. Manufacturers:
      e. Substitutions: See Section 01 2500- Product Requirements.

E. Stainless Steel Drip Plate: Provide “DP” stainless steel drip plate manufactured by Hohmann and Barnard at terminations of flashing.
   1. Substitutions permitted under provisions of Section 01 2500.

F. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive masonry.

B. Verify that related items provided under other sections are properly sized and located.

C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 COURSING

A. Establish lines, levels, and coursing indicated. Protect from displacement.

B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
3.03 PLACING AND BONDING

A. Lay masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
B. Remove excess mortar as work progresses.
C. Interlock intersections and external corners, except for units laid in stack bond.
D. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
E. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
F. Isolate top joint of masonry veneer from horizontal structural framing members or support angles with compressible joint filler.

3.04 WEEPS/CAVITY VENTS

A. Install weeps in veneer walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.
B. Install cavity vents in veneer walls at 32 inches on center horizontally below shelf angles and lintels and at top of walls.
C. Install cavity mortar diverter at base of cavity as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.
D. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

3.05 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

A. Stud back-up: Secure veneer anchors to stud framed back-up and embed into masonry veneer at spacing required by applicable codes. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 on center.
B. Concrete Masonry Unit back-up: Secure veneer anchors to CMU back-up and embed into masonry veneer at spacing required by applicable codes. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 on center.

3.06 MASONRY FLASHINGS

A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
B. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.

3.07 LINTELS

A. Install loose steel lintels over openings.

3.08 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control joints.
B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.
C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
3.09 TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
E. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

3.10 CUTTING AND FITTING

A. Cut and fit for pipes and conduit. Coordinate with other sections of work to provide correct size, shape, and location.
B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.11 CLEANING

A. Remove excess mortar and mortar smears as work progresses.
B. Replace defective mortar. Match adjacent work.
C. Clean soiled surfaces with cleaning solution.

3.12 PROTECTION OF FINISHED WORK

A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES

A. Concrete Block.
B. Mortar and Grout.
C. Reinforcement and Anchorage.
D. Flashings.
E. Accessories.

1.02 RELATED SECTIONS

A. Section 04 2113.13 – Brick Veneer Masonry.
B. Section 05 5000 - Metal Fabrications: Loose steel lintels.
C. Section 06 1000 - Rough Carpentry: Nailing strips built into masonry.
D. Section 07 9005 - Joint Sealers: Backing rod and sealant at control and expansion joints.

1.03 REFERENCES

A. ACI 530/ASCE 5/TMS 402 - Building Code Requirements for Masonry Structures; American Concrete Institute International; current edition.
B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; current edition.

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data for masonry units, fabricated wire reinforcement, and mortar and grout.
C. Shop Drawings: Indicate bar sizes, spacing, reinforcement quantities, bending and cutting schedules, reinforcement supporting and spacing devices, and accessories.

1.05 QUALITY ASSURANCE
A. Comply with provisions of ACI 530/ASCE 5/TMS 402 and ACI 530.1/ASCE 6/TMS 602, except where exceeded by requirements of the contract documents.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

1.07 ENVIRONMENTAL REQUIREMENTS
A. Cold and Hot Weather Requirements: Comply with requirements of ACI 530.1/ASCE 6/TMS 602 or applicable building code, whichever is more stringent.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS
A. Concrete Block: Comply with referenced standards and as follows:
   1. Size: Standard units with nominal face dimensions of 16 x 8 inches and nominal depths as indicated on the drawings for specific locations.
   2. Special Shapes: Provide non-standard blocks configured for corners, lintels, headers, control joint edges, and other detailed conditions.
   3. Load-Bearing Units: ASTM C 90, normal weight.
      a. Hollow block, as indicated.
      b. Exposed faces: Manufacturer's standard color and texture where indicated.
      c. Compressive Strength: 2,800 psi minimum based on net area, measured in accordance with ASTM C 140.

2.02 MORTAR AND GROUT MATERIALS
A. Specified in Section 04 0513.

2.03 REINFORCEMENT AND ANCHORAGE
A. Manufacturers of Joint Reinforcement and Anchors:
   4. Substitutions: See Section 01 6000 - Product Requirements.
B. Reinforcing Steel: ASTM A 615/A 615M Grade 60 (420).
   1. Deformed billet-steel bars.
   2. Galvanized in accordance with ASTM A 767/A 767M, Class I.
C. Single Wythe Joint Reinforcement: Ladder type; ASTM A 1064/1064M steel wire, hot dip galvanized after fabrication to ASTM A 153/A 153M, Class B: 0.1875 inch side rods with 0.1875 inch cross rods; width as required to provide not more than 1 inch and not less than 1/2 inch of
mortar coverage on each exposure.

D. Adjustable Multiple Wythe Joint Reinforcement: Ladder type with adjustable ties or tabs spaced at 16 in on center ASTM A 1064/1064M steel wire, hot dip galvanized after fabrication to ASTM A 153/A 153M, Class B: 0.1875 inch side rods with 0.1875 inch cross rods and adjustable components of 0.1875 inch wire; width of components as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from each masonry face.
   1. Vertical adjustment: Not less than 2 inches.

E. Strap Anchors: Bent steel shapes configured as required for specific situations, 1-1/4 in width, 0.105 in thick, lengths as required to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face, corrugated for embedment in masonry joint, hot dip galvanized to ASTM A 153/A 153M, Class B.

F. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not more than 1 inch and not less than 1/2 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.

2.04 FLASHINGS

A. Rubberized Asphalt Flashing: Self-adhering polymer-modified asphalt sheet complying with ASTM D 1970; minimum 0.030 inch total thickness; with cross-linked polyethylene top and bottom surfaces.
   1. Manufacturers:
      a. Grace Construction Products www.graceconstruction.com
      b. Polyguard Products, Inc. www.polyguardproducts.com
      c. Substitutions: See Section 01 6000 - Product Requirements.

B. Lap Sealant: Butyl type as specified in Section 07 9005.

2.05 ACCESSORIES

A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

B. Joint Filler: Closed cell rubber; oversized 50 percent to joint width; self expanding x by maximum lengths available.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

C. Drainage Devices: HDPE drainage device. Provide MORTAR NET, manufactured by Hohmann and Barnard.
   1. Substitutions permitted under provisions of Section 01 6000.

D. Stainless Steel Drip Plate: Provide “DP” stainless steel drip plate manufactured by Hohmann and Barnard at terminations of flashing.
   1. Substitutions permitted under provisions of Section 01 6000.

E. Nailing Strips: Softwood, preservative treated for moisture resistance, dovetail shape, sized to masonry joints.
   1. Substitutions: See Section 01 6000 - Product Requirements.

G. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

2.06 MORTAR MIXING
A. Thoroughly mix mortar ingredients using mechanical batch mixer, in accordance with ASTM C 270 and in quantities needed for immediate use.
B. Maintain sand uniformly damp immediately before the mixing process.
C. Do not use anti-freeze compounds to lower the freezing point of mortar.
D. If water is lost by evaporation, re-temper only within two hours of mixing.
E. Use mortar within two hours after mixing at temperatures of 90 degrees F, or two-and-one-half hours at temperatures under 40 degrees F.

2.07 GROUT MIXES
A. Bond Beams and Lintels: 3,000 psi strength at 28 days; 8-10 inches slump; mix in accordance with ASTM C 476.
   1. Fine grout for spaces with smallest horizontal dimension of 2 inches or less.
   2. Coarse grout for spaces with smallest horizontal dimension greater than 2 inches.

2.08 GROUT MIXING
A. Mix grout in accordance with ASTM C 94/C 94M.
B. Thoroughly mix grout ingredients in quantities needed for immediate use in accordance with ASTM C 476 for fine and coarse grout.
C. Add admixtures in accordance with manufacturer's instructions; mix uniformly.
D. Do not use anti-freeze compounds to lower the freezing point of grout.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive masonry.
B. Verify that related items provided under other sections are properly sized and located.
C. Verify that built-in items are in proper location, and ready for roughing into masonry work.

3.02 PREPARATION
A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
B. Clean reinforcement of loose rust.
C. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.
D. For areas where high-lift grouting will be employed, provide cleanout openings as follows:
   1. Hollow Masonry: Not less than 8 inches high at the bottom of each cell to be grouted, formed by cutting out face shell of masonry unit.

3.03 COURSING
A. Establish lines, levels, and coursing indicated. Protect from displacement.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
C. Concrete Masonry Units:
1. Bond: Running.
2. Coursing: One unit and one mortar joint to equal 8 inches.

3.04 PLACING AND BONDING
A. Lay hollow masonry units with face shell bedding on head and bed joints.
B. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
C. Remove excess mortar as work progresses.
D. Interlock intersections and external corners.
E. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
G. Cut mortar joints flush where wall tile is scheduled or resilient base is scheduled.

3.05 REINFORCEMENT AND ANCHORAGE
A. Reinforcement Bars: Secure at locations indicated and to avoid displacement during grouting. Minimum spacing between bars or to masonry surfaces shall be one bar diameter.
B. Joint Reinforcement: Install horizontal joint reinforcement 16 inches on center.
   1. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
   2. Place continuous joint reinforcement in first and second joint below top of walls.
   3. Lap joint reinforcement ends minimum 6 inches.
C. Anchors: Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 36 inches horizontally and 24 inches vertically.
D. Wall Ties: Install wall ties at locations indicated, spaced at not more than 24 inches on center horizontally and 16 inches on center vertically, unless otherwise indicated on drawings.
E. Reinforced Hollow Unit Masonry: Keep vertical cores to be grouted clear of mortar, including bed area of first course.
   1. Bond Beams: At bond beams or other locations for horizontally reinforced masonry, provide special masonry units or saw to accommodate reinforcement.

3.06 MASONRY FLASHINGS
A. Whether or not specifically indicated, install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
B. Extend metal flashings through exterior face of masonry and turn down to form drip.
C. Extend plastic and laminated flashings to within 1/4 inch of exterior face of masonry.
D. Lap end joints of flashings at least 4 inches and seal watertight with mastic or elastic sealant.

3.07 WEEPS/CAVITY VENTS
A. Install weeps in veneer and cavity walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.

3.08 CAVITY MORTAR CONTROL
A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.

C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.

### 3.09 GROUTING

A. Use low-lift grouting techniques.

B. Low-Lift Grouting:
   1. Limit height of pours to 12 inches.
   2. Limit height of masonry to 16 inches above each pour.
   3. Pour grout only after vertical reinforcing is in place; place horizontal reinforcing as grout is poured. Prevent displacement of bars as grout is poured.
   4. Place grout for each pour continuously and consolidate immediately; do not interrupt pours for more than 1-1/2 hours.

### 3.10 CONTROL AND EXPANSION JOINTS

A. Do not continue horizontal joint reinforcement through control and expansion joints.

B. Form control joint with a sheet building paper bond breaker fitted to one side of the hollow contour end of the block unit. Fill the resultant core with grout fill. Rake joint at exposed unit faces for placement of backer rod and sealant.

C. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

D. Size control joint in accordance with Section 07 90 05 for sealant performance.

### 3.11 BUILT-IN WORK

A. As work progresses, install built-in metal door frames and other items to be built into the work and furnished under other sections.

B. Install built-in items plumb, level, and true to line.

C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
   1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.

D. Do not build into masonry construction organic materials that are subject to deterioration.

### 3.12 TOLERANCES

A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.

B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.

C. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.

D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.

E. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft.

F. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.

### 3.13 CUTTING AND FITTING

A. Cut and fit for chases, pipes, conduit, sleeves, and grounds. Coordinate with other sections of work to provide correct size, shape, and location.

B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.
3.14 CLEANING
   A. Remove excess mortar and mortar smears as work progresses.
   B. Replace defective mortar. Match adjacent work.
   C. Clean soiled surfaces with cleaning solution.
   D. Use non-metallic tools in cleaning operations.

3.15 PROTECTION OF FINISHED WORK
   A. Without damaging completed work, provide protective boards at exposed external corners
      which are subject to damage by construction activities.

END OF SECTION
SECTION 04 7200
CAST STONE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Architectural cast stone.
B. Units required are indicated on the drawings.

1.02 RELATED SECTIONS

A. Section 04 0513 - Mortar and Masonry Grout: Mortar for setting cast stone.
B. Section 04 2200 – Reinforced Unit Masonry Assemblies: Installation of cast stone in conjunction with masonry.
C. Section 07 9005 - Joint Sealers: Materials and execution methods for sealing soft joints in cast stone work.

1.03 REFERENCES

A. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; current edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Manufacturer's Qualification Data: Documentation showing compliance with specified requirements.
C. Product Data: Test results of cast stone components made previously by the manufacturer.
   1. Include one copy of ASTM C 1364 for Architect’s use.
D. Shop Drawings: Include elevations, dimensions, layouts, profiles, cross sections, reinforcement, exposed faces, arrangement of joints, anchoring methods, anchors, and piece numbers.
E. Mortar Color Selection Samples.
F. Verification Samples: Pieces of actual cast stone components not less than 12 inches square, illustrating range of color and texture to be anticipated in components furnished for the project.

G. Full-Size Samples: One unit of each shape, for review.

H. Source Quality Control Test Reports.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: A current producer member of the Cast Stone Institute with a minimum of 5 years of experience in producing cast stone of the types required for project and:
   1. Adequate plant capacity to furnish quality, sizes, and quantity of cast stone required without delaying progress of the work.
   2. Products previously produced by plant and exposed to weather that exhibit satisfactory appearance.

B. Source Quality Control: Test compressive strength and absorption of specimens selected at random from plant production.
   1. Test in accordance with ASTM C 642.
   2. Select specimens at rate of 3 per 500 cubic feet, with a minimum of 3 per production week.
   3. Submit reports of tests by independent testing agency, showing compliance with requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver cast stone components secured to shipping pallets and protected from damage and discoloration. Protect corners from damage.

B. Number each piece individually to match shop drawings and schedule.

C. Store cast stone components and installation materials in accordance with manufacturer’s instructions.

D. Store cast stone components on pallets with nonstaining, waterproof covers. Ventilate under covers to prevent condensation. Prevent contact with dirt.

E. Protect cast stone components during handling and installation to prevent chipping, cracking, or other damage.

F. Store mortar materials where contamination can be avoided.

G. Schedule and coordinate production and delivery of cast stone components with unit masonry work to optimize on-site inventory and to avoid delaying the work.

1.07 MOCK-UP

B. Construct a masonry wall as a mock-up panel in accordance with Section 01 4201, which includes mortar and accessories and structural backup.

C. Locate where directed.

D. Mock-up may not remain as part of the Work.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Cast Stone:
   1. Any current producer member of the Cast Stone Institute.
2.02 ARCHITECTURAL CAST STONE

A. Cast Stone: Architectural concrete product manufactured to match existing cast stone on connecting adjacent building, and complying with ASTM C 1364.
   1. Compressive Strength: As specified in ASTM C 1364; calculate strength of pieces to be field cut at 80 percent of uncut piece.
   2. Freeze-Thaw Resistance: Demonstrated by laboratory testing in accordance with ASTM C 1364.
   3. Surface Texture: Fine grained texture, with no bugholes, air voids, or other surface blemishes visible from distance of 20 feet.
   4. Color: Match color and texture of cast stone on connecting adjacent building.
   5. Remove cement film from exposed surfaces before packaging for shipment.

B. Shapes: Provide shapes indicated on drawings.
   1. Variation from Any Dimension, Including Bow, Camber, and Twist: Maximum of plus/minus 1/8 inch or length divided by 360, whichever is greater, but not more than 1/4 inch.
   2. Unless otherwise indicated on drawings, provide:
      a. Wash or slope of 1:12 on exterior horizontal surfaces.
      b. Drips on projecting components, wherever possible.
      c. Raised fillets at back of sills and at ends to be built in.

C. Reinforcement: Provide reinforcement as required to withstand handling and structural stresses; comply with ACI 318.
   1. Pieces More than 12 inches Wide: Provide full length two-way reinforcement of cross-sectional area not less than 0.25 percent of unit cross-sectional area.

2.03 MATERIALS

   1. For Units: Type I or II, white.
   2. For Mortar: Type I or II, except Type III may be used in cold weather.

B. Coarse Aggregate: ASTM C 33, except for gradation; granite, quartz, or limestone.

C. Fine Aggregate: ASTM C 33, except for gradation; natural or manufactured sands.

D. Admixtures: ASTM C 494/C 494M.

E. Water: Potable.

F. Reinforcing Bars: ASTM A 615/A 615M deformed bars, galvanized.

G. Steel Welded Wire Reinforcement: ASTM A 185/A 185M, galvanized.

H. Embedded Anchors, Dowels, and Inserts: ASTM A 123/A 123M hot-dip galvanized steel, of type and size as required for conditions.

I. Shelf Angles and Similar Structural Items: Hot-dip galvanized steel per ASTM A123/A 123M, of shapes and sizes as required for conditions.

J. Mortar: Portland cement-lime, ASTM C 270, Type N.

K. Sealant: As specified in Section 07 90 00.

L. Cleaner: General-purpose cleaner designed for removing mortar and grout stains, efflorescence, and other construction stains from new masonry surfaces without discoloring or damaging masonry surfaces; approved for intended use by cast stone manufacturer and by cleaner manufacturer for use on cast stone and adjacent masonry materials.
PART 3 EXECUTION

3.01 EXAMINATION

A. Examine construction to receive cast stone components. Notify Architect if construction is not acceptable.

B. Do not begin installation until unacceptable conditions have been corrected.

3.02 INSTALLATION

A. Install cast stone components in conjunction with masonry, complying with requirements of Section 04 2001.

B. Anchor units as indicated on approved submittals.

C. Setting:
   1. Drench cast stone components with clear, running water immediately before installation.
   2. Set units in a full bed of mortar unless otherwise indicated.
   3. Fill vertical joints with mortar.
   4. Fill dowel holes and anchor slots completely with mortar or non-shrink grout.

D. Joints: Make all joints 3/8 inch, except as otherwise detailed.
   1. Rake mortar joints 3/4 inch for pointing. Scrub face of each stone to remove excess mortar before it sets.
   2. Point joints with mortar in layers 3/8 inch thick and tool to a slight concave profile.
   3. Leave the following joints open for sealant and backer rod:
      a. Head joints in top courses, including copings, parapets, cornices, sills, and steps.
      b. Joints in projecting units.
      c. Joints between rigidly anchored units, including soffits, panels, and column covers.
      d. Joints below lugged sills and stair treads.
      e. Joints below ledge and relieving angles.
      f. Joints labeled "expansion joint".

E. Sealant Joints: Install sealants as specified in Section 07 9005.

F. Installation Tolerances:
   1. Variation from Plumb: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet or more.
   2. Variation from Level: Not more than 1/8 inch in 10 feet or 1/4 inch in 20 feet, or 3/8 inch maximum.
   3. Variation in Joint Width: Not more than 1/8 inch in 36 inches or 1/4 of nominal joint width, whichever is less.
   4. Variation in Plane Between Adjacent Surfaces (Lipping): Not more than 1/16 inch difference between planes of adjacent units or adjacent surfaces indicated to be flush with units.

3.03 CLEANING AND PROTECTION

A. Repair chips and other surface damage noticeable when viewed in direct daylight at 20 feet.
   1. Repair with matching touchup material provided by the manufacturer and in accordance with manufacturer's instructions.
   2. Repair methods and results subject to Architect's approval.

B. Clean cast stone components as work progresses; remove mortar fins and smears before tooling joints.

C. Protect from splashing by mortar and other damage.

END OF SECTION
PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes the following:
   1. Structural steel framing members and connections.
   2. Deck support angles.
   4. Shop prime painting and touch up painting in the field.
   5. Temporary construction bracing.
   6. Fabrication and erection inspection and testing.

B. Related Sections include the following:
   1. Division 1 Section "Quality Requirements" for independent testing agency procedures and administrative requirements.
   2. Division 1 Section "Submittals" for administrative requirements for the submission of shop drawings and other submittals.
   3. Division 5 Section "Architecturally Exposed Structural Steel.
   4. Division 5 Section "Steel Deck" for field installation of shear connectors.
   5. Division 5 Section "Metal Fabrications" for steel lintels or shelf angles not attached to structural-steel frame miscellaneous steel fabrications and other metal items not defined as structural steel.
   6. Division 5 Section "Metal Stairs".
   7. Division 7 Section "Sprayed-On Fireproofing".
   8. [Division 9 painting Sections] [and] [Division 9 Section "High-Performance Coatings"] for surface preparation and priming requirements.

1.03 DEFINITIONS

A. Structural Steel: Elements of structural-steel frame, as classified by AISC's "Code of Standard Practice for Steel Buildings and Bridges," that support design loads.

1.04 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand ASD-service loads indicated and comply with other information and restrictions indicated.
   2. Engineering Responsibility: Fabricator's responsibilities include using a qualified professional engineer to prepare structural analysis data for structural-steel connections.

B. Construction: Type FR, fully restrained.

1.05 SUBMITTALS

A. Submit in accordance with Division 1 Section “Submittals”.

B. Submittals for Review
1. Provide complete details and schedules for fabrication and shop assembly of members, erection plans, details, procedures, and diagrams showing sequence of erection of structural steel components.
   a. Include details of cuts, connections, splices, camber, holes, and other pertinent data.
   b. Include embedment drawings.
   c. Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld.
   d. Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections.
2. Shop drawings and erection drawings shall not be made by using reproductions of Contract Drawings.
3. Structural steel members for which shop drawings have not been reviewed shall not be fabricated. Engineer's review shall cover general locations, spacings, and details of design. Omission from shop drawings of any materials required by the Contract Documents shall not relieve the Contractor of the responsibility of furnishing and installing such materials, even though such shop drawings may have been reviewed and returned.

C. Submittals for Information:
1. Product Data: For each type of product indicated.
2. For structural-steel connections indicated to comply with design loads, include structural analysis data signed and sealed prepared by the qualified professional engineer responsible for their preparation.
3. Connection Calculations: Contractor shall design all connections not specifically detailed on the Drawings under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Texas. Submit design calculations for the connections designed by the contractor, prior to or with the steel shop drawings. Shop drawings containing connections for which calculations have not been received shall be returned unchecked as an incomplete submittal. Calculations shall be retained for the Engineer's file and will not be approved or returned.
   a. Connections shall be designed in accordance with the requirements specified in the Structural Drawings and Specifications.
   b. Beam connections: Submit a complete calculation for each different beam connection used and detailed on the shop drawings. Conditions which are similar may be grouped together so as to utilize a single connection design.
   c. Submit complete connection calculations for wind brace connections, truss connections, moment connections and other connections where specified on the Contract Drawings. Each calculation shall identify the location or locations for which the connection applies, the member mark(s) from the Contract Documents, the piece mark(s) from the shop drawings, the member size, the design loading(s), member size, and the end of the member to which the connection applies.
5. Qualification Data: For Installer fabricator.
6. Mill Test Reports: Signed by manufacturers certifying that the following products comply with requirements:
   a. Structural steel including chemical and physical properties.
   b. Bolts, nuts, and washers including mechanical properties and chemical analysis.
   c. Direct-tension indicators.
   d. Tension-control, high-strength bolt-nut-washer assemblies.
   e. Shear stud connectors.
   f. Shop primers.
7. Source quality-control test reports.

D. QUALITY ASSURANCE

E. Installer Qualifications: Company specializing in performing the work of this section with minimum 5 years documented experience.
F. Fabricator Qualifications: A qualified fabricator that participates in a nationally accepted inspections program acceptable to the registered design professional in responsible charge.

G. Fabricator Qualifications: The special inspector shall verify that the fabricator maintains detailed fabrication and quality control of the workmanship and the fabricator’s ability to conform to approved construction documents and referenced standards. The special inspector shall review the procedures for completeness and adequacy relative to the code requirements for the fabricator’s scope of work.

1. Exception: Special inspections shall not be required where the work is done on the premises of a fabricator that is enrolled in a nationally accepted inspections program acceptable to the registered design professional in responsible charge. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to building official upon request and to the registered design professional in responsible charge stating that the work was performed in accordance with the approved construction documents.

H. Welding: Qualify procedures and personnel according to AWS D1.1, "Structural Welding Code--Steel."

I. The latest adopted edition of all standards referenced in this Section shall apply unless noted otherwise. In case of conflict between these Contract Documents and the referenced standard, the Contract Documents shall govern. In case of conflict between these Contract Documents and the Building Code, the more stringent shall govern.

J. The Contractor shall furnish fabrication and erection inspection and testing of all welds in accordance with AWS D1.1, Chapter 6. Submit records of inspections and tests to the Owner's testing laboratory for their review. The fabrication and erection inspectors shall be AWS certified welding inspectors.

K. All materials, fabrication procedures and field erection are subject to verification inspection and testing by the Owner's testing laboratory in both the shop and field. Such inspections and tests will not relieve the Contractor of the responsibility for providing materials and fabrication procedures in compliance with specified requirements.

L. Qualifications for Welding Work: Contractor shall be responsible for qualifying welding operators in accordance with the AWS "Standard Qualification Procedure." Provide certification to Owner's testing laboratory that welders to be employed in the work have satisfactorily passed AWS qualification tests. Recertification of welders shall be Contractor's responsibility.

M. Qualification of Welding Procedures: Contractor shall provide the testing laboratory with welding procedures which are to be used. Welding procedures shall be qualified prior to use in accordance with AWS D1.1, Part B.

N. Comply with applicable provisions of the following specifications and documents:

1. AISC's "Code of Standard Practice for Steel Buildings and Bridges"
3. AISC's "Specification for Structural Steel Buildings."
4. ASTM A6 "Specifications for General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use."
5. AISC's "Specification for the Design of Steel Hollow Structural Sections."
7. AWS D1.1 "Structural Welding Code"
8. SSPC (Society for Protective Coatings), standards as noted.
9. UL "Fire Resistance Directory."

O. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."
1.06 DELIVERY, STORAGE, AND HANDLING
A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from erosion and deterioration.
1. Store fasteners in a protected place. Clean and relubricate bolts and nuts that become dry or rusty before use.
2. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

1.07 COORDINATION
A. Furnish anchorage items to be embedded in or attached to other construction without delaying the Work. Provide setting diagrams, sheet metal templates, instructions, and directions for installation.

PART 2 PRODUCTS
2.01 STRUCTURAL-STEEL MATERIALS
1. W-Shapes: ASTM A 992/A 992M.
B. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M.
C. Plate and Bar: ASTM A 36/A 36M.
D. For ASTM A6 groups 4 and 5 rolled shapes, spliced or otherwise, connected by full penetration welds, provide material with Charpy V-Notch testing in accordance with ASTM A6, Supplementary Requirement S5. The impact test shall meet the minimum average value of 20 foot pounds absorbed energy at 70 degrees Fahrenheit and shall be conducted in accordance with ASTM A673 and the AISC Specifications for Structural Steel Buildings.
E. For plates exceeding 2" thickness used in built up members which are spliced or connected by full penetration welds, provide material with Charpy V-Notch testing in accordance with ASTM A6, Supplementary Requirement S5. The impact test shall be conducted by the producer in accordance with ASTM A673, Frequency P and shall meet a minimum average value of 20 ft pounds absorbed energy at 70 degrees Fahrenheit.
F. Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
G. Steel Pipe: ASTM A 53/A 53M, Type E, Grade B.
1. Weight Class: As indicated on the drawings.
2. Finish: Black, except where indicated to be galvanized.
H. Welding Electrodes: Comply with AWS requirements.
I. Welding electrodes: AWS D1.1, E70. Welding electrodes used in full penetration welds shall have a minimum Charpy V-Notch toughness of 20 ft.-lbs at -20 degrees Fahrenheit when tested in accordance with ASTM A6.

2.02 BOLTS, CONNECTORS, AND ANCHORS
A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.
1. Finish: Plain.
2. Direct-Tension Indicators: ASTM F 959, Type 325 compressible-washer type. Direct – Tension indicators shall be "Load Indicator Washers" as manufactured by the Bethlehem Steel Corporation.
a. Finish: Plain.
B. High-Strength Bolts, Nuts, and Washers: ASTM A 490, Type 1, heavy hex steel structural bolts or tension-control, bolt-nut-washer assemblies with splined ends; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers, plain.
   1. Direct-Tension Indicators: ASTM F 959, Type 490, compressible-washer type, plain. Direct tension indicator washers shall be the standard or squirter type.
   2. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1, Type B.
   7. Finish: Plain.

C. Threaded Rods: ASTM A 36/A 36M.
   3. Finish: Plain.

D. Clevises and Turnbuckles: ASTM A 108, Grade 1035, cold-finished carbon steel.


G. Drilled expansion bolts shall be one of the following:
   1. Kwik Bolt TZ, Hilti, Inc., Tulsa, Oklahoma
   2. Strong Bolt 2, Simpson Strong-Tie Company, Inc.

H. Adhesive Anchors:
   1. In concrete:
      a. HIT RE500-SD epoxy, Hilti Inc.
      b. SET-XP epoxy, Simpson Strong-Tie, Inc.
      c. HIT-HY150MAX-SD acrylic, Hilti, Inc.
   2. In grouted masonry:
      a. HIT-HY-150MAX, Hilti, Inc.
      b. SET epoxy, Simpson Strong-Tie Company, Inc.
      c. AT acrylic, Simpson Strong-Tie Company, Inc.
   3. Adhesive anchor rods: As noted on the drawings.

2.03 PRIMER

A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer.

B. Galvanizing Repair Paint: ASTM A 780.

C. FABRICATION

D. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Comply with fabrication requirements, including tolerance limits, of AISC's "Code of Standard Practice for Steel Buildings and Bridges", AISC's "Specification for Structural Steel Buildings", and as indicated on accepted shop drawings.
   1. Camber structural-steel members where indicated.
   2. Camber: Provide camber in members where indicated. Specified camber applies at the jobsite, just prior to erection, lying flat so that the member weight has no effect. Take necessary precautions to prevent or compensate for camber loss during shipment. Measured camber in members up to 50'-0" long shall be within a tolerance of minus 1/2" to plus zero from the amount specified. For members greater than 50'-0" long, both the positive and negative tolerance may increase 1/8" for every 10'-0" of length in excess of 50'-0". Members with field measured camber outside of the specified tolerance shall be returned to the shop.
3. Mill tolerances shall conform to ASTM A6. Identify high-strength structural steel according to ASTM A 6/ A 6M and maintain markings until structural steel has been erected.
4. Mark and match-mark materials for field assembly.
5. Plates shall be free of gross discontinuities such as ruptures and delaminations. Plates shall comply with ASTM A578, Level 1.
6. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

E. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.
   1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1.

F. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

G. Finishing: Accurately finish ends of columns and other members transmitting bearing loads. Members in compression joints which depend on contact bearing shall have the bearing surfaces milled to a common plane. Members to be milled shall be completely assembled before milling.

H. Base Plates: Oversize anchor bolt holes in base plates to facilitate erection as specified in Table 14-2 in AISC 360-05.

I. Cleaning: Clean and prepare steel surfaces that are to remain unpainted according to SSPC-SP 2, "Hand Tool Cleaning."

J. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

K. Holes: Provide holes required for securing other work to structural steel and for passage of other work through steel framing members.
   1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
   2. Base-Plate Holes: Cut, drill, or punch holes perpendicular to steel surfaces.
   3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.04 SHOP CONNECTIONS

A. High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
   1. Joint Type: Snug tightened.
   2. Provide washers over all slotted holes in an outer ply.

B. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work. Welds not specified shall be continuous fillet welds designed to develop the full strength of the member. A combination of welds and bolts shall not be used to transmit stress at the same face of any connections. Clean completed welds prior to inspection. Slag shall be removed from all completed welds.
   1. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

C. SHOP PRIMING

D. Shop prime steel surfaces except the following:
   1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
   2. Surfaces to be field welded.
   3. Surfaces to be high-strength bolted with slip-critical connections.
   4. Surfaces to receive sprayed fire-resistive materials.
   5. Galvanized surfaces.
   6. Surfaces of exposed high strength, low alloy steel members (weathering steel).
7. Top surfaces of beams which support composite metal floor deck.
8. Headed shear studs, although overspray is acceptable.

E. GALVANIZING

F. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/ A 123M.
   1. Fill vent holes and grind smooth after galvanizing.

G. Galvanizing: The following steel shall be hot-dip galvanized (including any associated fasteners):
   1. Lintels and shelf angles attached to structural-steel frame and located in exterior walls.
   2. Cooling tower framing and supports.
   3. Cooling tower screen support members and braces.
   4. Railing exposed to weather.

H. SOURCE QUALITY CONTROL

I. Owner will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
   1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

J. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

K. Bolted Connections: Shop-bolted connections will be[tested and] inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

L. Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1 and the following inspection procedures, at testing agency's option:
   1. Liquid Penetrant Inspection: ASTM E 165.
   2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
   4. Radiographic Inspection: ASTM E 94.

M. In addition to visual inspection, shop-welded shear connectors will be tested and inspected according to requirements in AWS D1.1 for stud welding and as follows:
   1. Bend tests will be performed if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.
   2. Tests will be conducted on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments, with steel erector present, for compliance with requirements.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
3.02 PREPARATION

A. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Design of temporary bracing and supports shall be the responsibility of the Contractor. Remove temporary supports when permanent structural steel, connections, and bracing are in place, unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.03 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and "[Specification for Structural Steel Buildings--Allowable Stress Design and Plastic Design] [Load and Resistance Factor Design Specification for Structural Steel Buildings]," unless closer tolerances are required for proper fitting of adjoining or enclosing materials, in which case the more stringent shall apply.


1. Set base plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of base plate.
3. Snug-tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of base plate before packing with grout.
4. Promptly pack grout solidly between bearing surfaces and base plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
5. Grout under baseplates in accordance with Section 03300.


D. Align and adjust various members forming part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure is completed and in service.

E. Splice members only where indicated. Any member having a splice not shown and detailed on the accepted shop drawings shall be rejected.

F. Do not field cut or alter structural members without approval of Architect/Engineer. Do not use thermal cutting during erection.

G. Gas Cutting: Do not use gas cutting torches in the field to correct fabrication errors in structural framing.

H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

I. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1 and manufacturer's written instructions.

J. FIELD CONNECTIONS

K. High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.

1. Joint Type: Snug tightened.
2. A307 bolts and high-strength (A325 and A490) bolts noted to be "snug-tight" shall be tightened using a few impacts of an impact wrench or the full effort of a man using an ordinary spud wrench, bringing the plies into contact.

3. High-strength bolts which are not specifically designated to be "snug-tight" shall be tightened to provide at least the minimum tension shown in Table 4 of the "Specification for Structural Joints using ASTM A325 and A490 Bolts." Tightening shall be done by the turn-of-the-nut method, with direct tension indicators, or by properly calibrated wrenches.

4. Bolts tightened with a calibrated wrench or by torque control shall have a hardened washer under the element (nut or bolt head) turned in tightening.

5. Hardened washers shall be placed over slotted holes in an outer ply. Hardened beveled washers shall be used where the outer face of the bolted parts has a slope greater than 1:20 with respect to the bolt axis.

L. Weld Connections: Comply with AWS D1.1 for welding procedure specifications, tolerances, appearance, and quality of welds and for methods used in correcting welding work. Welds not specified shall be continuous fillet welds designed to develop the full strength of the member. A combination of welds and bolts shall not be used to transmit stress at the same face of any connections. Clean completed welds prior to inspection. Slag shall be removed from all completed welds.


2. Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding tolerances of AISC's "Code of Standard Practice for Steel Buildings and Bridges" for mill material.

3.04 PREFABRICATED BUILDING COLUMNS

A. Install prefabricated building columns to comply with AISC's "Specification for Structural Steel Buildings" manufacturer's written recommendations, and requirements of testing and inspecting agency that apply to the fire-resistance rating indicated.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.

B. Bolted Connections: Shop-bolted connections will be tested and inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

C. Welded Connections: Field welds will be visually inspected according to AWS D1.1.

1. In addition to visual inspection, field welds will be tested according to AWS D1.1 and the following inspection procedures, at testing agency's option:
   a. Liquid Penetrant Inspection: ASTM E 165.
   b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
   c. Ultrasonic Inspection: ASTM E 164.
   d. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect field-welded shear connectors according to requirements in AWS D1.1 for stud welding and as follows:

1. Perform bend tests if visual inspections reveal either a less-than-continuous 360-degree flash or welding repairs to any shear connector.

2. Conduct tests on additional shear connectors if weld fracture occurs on shear connectors already tested, according to requirements in AWS D1.1.

E. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
3.06 REPAIRS AND PROTECTION

A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Touch-up Cold Galvanizing: Touch up areas of hot dip galvanized members where galvanizing has been abraded during shipping and erection and areas where galvanizing has been removed or damaged due to welding. Apply cold galvanizing compound in accordance with the manufacturer's instructions to a minimum dry film thickness of 2.0 mils.

C. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists and accessories and abutting structural steel.
   1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.
   2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.

D. Touch-up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas with same materials as used for shop painting. Apply by brush or spray to provide a minimum dry film thickness of 2.5 mils.

E. Touchup Painting: Cleaning and touchup painting are specified in Division 9 painting Sections.

END OF SECTION
SECTION 05 2100
STEEL JOISTS

PART 1  GENERAL

1.01  RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02  SUMMARY
A. Furnish all labor and materials required to fabricate, deliver, and erect steel joists and joist girders, including all bridging, ceiling extensions, bearing plates, side wall anchors, and extended ends.
B. This Section includes the following:
   2. KCS-type K-series steel joists.
C. Related Sections include the following:
   1. Division 3 Section "Cast-in-Place Concrete" for installing bearing plates in concrete.
   2. Division 4 Section "Unit Masonry Assemblies" for installing bearing plates in unit masonry.

1.03  DEFINITIONS
A. SJI "Specifications": Steel Joist Institute's "Standard Specifications, Load Tables and Weight Tables for Steel Joists and Joist Girders."
B. Special Joists: Steel joists or joist girders requiring modification by manufacturer to support nonuniform, unequal, or special loading conditions that invalidate load tables in SJI's "Specifications."

1.04  PERFORMANCE REQUIREMENTS
A. Structural Performance: Provide special joists and connections capable of withstanding design loads indicated.
B. Design special joists to withstand design loads with live load deflections no greater than the following:
   1. Roof Joists: Vertical deflection of 1/360 of the span.

1.05  SUBMITTALS
A. Submit in accordance with Division 1 Section “Submittals.”
B. Submittals for Review:
   1. Shop Drawings: Show layout, designation, number, type, location, and spacings of joists. Include joining and anchorage details, bracing, bridging, camber, coatings, material properties, configuration, joist accessories; splice and connection locations and details; and attachments to other construction.
C. Submittals for Information:
   1. Design calculations for all joist girders, and for all joists for which the standard load tables are not applicable. Submit prior to, or with the shop drawings. Calculations shall bear the seal of a Registered Professional Engineer, licensed in the State of Texas. Shop drawings submitted without corresponding calculations will be returned unchecked as an
incomplete submittal. Calculations will be retained for the Architect's file and will not be approved or returned.

2. Welders Certificates: Submit certificates to Owner's Testing Laboratory, certifying that welders to be employed on the project have passed AWS qualification tests within the previous 12 months. If recertification of welders is required, recertification shall be contractor's responsibility.

3. Product Data: For each type of joist, accessory, and product indicated.
   a. Indicate locations and details of bearing plates to be embedded in other construction.

4. Manufacturer Certificates: Signed by manufacturers certifying that joists comply with requirements.

5. Mill Certificates: Signed by bolt manufacturers certifying that bolts comply with requirements.

6. Field quality-control test and inspection reports.

7. Include statement indicating costs for each product having recycled content.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer certified by SJI to manufacture joists, including headers and other supplemental framing, complying with applicable standard specifications and load tables of SJI "Specifications." Manufacturer shall have a minimum of five years documented experience in the design and fabrication of open-web joists and joist girders.

   1. Manufacturer's responsibilities include providing professional engineering services for designing special joists to comply with performance requirements.

B. SJI Specifications: Comply with standard specifications in SJI's "Specifications" that are applicable to types of joists indicated.

C. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

1.07 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle joists as recommended in SJI's "Specifications."

B. Protect joists from corrosion, deformation, and other damage during delivery, storage, and handling.

1.08 SEQUENCING

A. Deliver steel bearing plates to be built into cast-in-place concrete and masonry construction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel: Comply with SJI's "Specifications" for web and steel-angle chord members.

   1. Structural Steel For Supplementary Framing and Joist Leg Extensions: ASTM A36, minimum

B. Steel Bearing Plates: ASTM A 36/A 36M.

C. Carbon-Steel Bolts and Threaded Fasteners: ASTM A 307, Grade A, carbon-steel, hex-head bolts and threaded fasteners; carbon-steel nuts; and flat, unhardened steel washers.7

   1. Finish: Plain, uncoated.

D. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy hex steel structural bolts; ASTM A 563 heavy hex carbon-steel nuts; and ASTM F 436 hardened carbon-steel washers.

   1. Finish: Plain.

E. Welding Electrodes: Comply with AWS standards.
F. PRIMERS

G. Primer: SSPC-Paint 15, Type 1 red oxide, or manufacturer's standard shop primer complying with performance requirements in SSPC-Paint 15.

H. K-SERIES STEEL JOISTS


J. Steel Joist Substitutes: Manufacture according to "Standard Specifications for Open Web Steel Joists, K-Series" in SJI's "Specifications," with steel-angle or -channel members.

K. Comply with AWS requirements and procedures for shop welding, appearance, quality of welds, and methods used in correcting welding work. Refer to Section 2.7 C. for additional welding requirements.

L. Provide holes in chord members for connecting and securing other construction to joists. Do not make or enlarge holes by burning.

M. Top-Chord Extensions: Extend top chords of joists with SJI's Type S top-chord extensions where indicated, complying with SJI's "Specifications."

N. Extended Ends: Extend bearing ends of joists with SJI's Type R extended ends where indicated, complying with SJI's "Specifications."

O. Do not camber joists.

P. Equip bearing ends of joists with manufacturer's standard beveled ends or sloped shoes if joist slope exceeds 1/4 inch per 12 inches.

Q. JOIST ACCESSORIES

R. Bridging: Provide bridging anchors and number of rows of horizontal or diagonal bridging of material, size, and type required by SJI's "Specifications" for type of joist, chord size, spacing, and span. Furnish additional erection bridging if required for stability.

S. Bridging: Schematically indicated. Detail and fabricate according to SJI's "Specifications." Furnish additional erection bridging if required for stability.

T. Fabricate steel bearing plates with integral anchorages of sizes and thicknesses indicated. Shop prime paint.

U. Steel bearing plates with integral anchorages are specified in Division 5 Section "Metal Fabrications."

V. Supply ceiling extensions, either extended bottom-chord elements or a separate extension unit of enough strength to support ceiling construction. Extend ends to within 1/2 inch of finished wall surface, unless otherwise indicated.

W. Supply miscellaneous accessories, including splice plates and bolts required by joist manufacturer to complete joist installation.

2.02 FABRICATION

A. Splices: Shop splices may occur in chord or web members. Members containing a butt weld splice shall develop an ultimate tensile force of at least 57,000 psi times the full design area of the chord or web.

B. Holes shall not be made or enlarged by burning with a torch.

C. Welds shall meet the following criteria for acceptance:
   1. Remove slag from welds prior to inspection.
   2. Cracked welds are not acceptable and must be repaired.
3. Thorough fusion shall exist between the weld and base metal, as determined by visual inspection.

4. Unfilled weld craters shall not be included in the design length of the weld.

5. Undercut shall not exceed 1/16" provided that it is oriented parallel to the principal stress.

6. The sum of surface (piping) porosity diameters shall not exceed 1/16" in any 1" of design weld length.

7. Weld spatter that does not interfere with paint coverage is acceptable.

2.03 CLEANING AND SHOP PAINTING

A. Clean and remove loose scale, heavy rust, and other foreign materials from fabricated joists and accessories by hand-tool cleaning, SSPC-SP 2 or power-tool cleaning, SSPC-SP 3.

B. Do not prime paint joists and accessories to receive sprayed fire-resistive materials.

C. Apply 1 coat of shop primer to joists and joist accessories to be primed to provide a continuous, dry paint film not less than 1 mil thick.

2.04 EXAMINATION

A. Examine supporting substrates, embedded bearing plates, and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance.

1. Proceed with installation only after unsatisfactory conditions have been corrected.

2.05 INSTALLATION

A. Do not install joists until supporting construction is in place and secured.

B. Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Specifications," joist manufacturer's written recommendations, and requirements in this Section.

1. Before installation, splice joists delivered to Project site in more than one piece.

2. Space, adjust, and align joists accurately in location before permanently fastening.

3. Minimum bearings and anchorage shall conform to referenced SJI standards and the Drawings.

4. Allow for erection loads. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction. Construction loads shall not be applied until joists are permanently fastened to supports and all bridging has been installed.

5. Delay rigidly connecting bottom-chord extensions to columns or supports until dead loads have been applied.

C. Field weld joists to supporting steel bearing plates and framework. Coordinate welding sequence and procedure with placement of joists. Comply with AWS requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

D. Bolt joists to supporting steel framework using ASTM A 307 carbon-steel bolts.


F. Bridging shall conform to SJI standards and the shop drawings. Provide and install extra bridging, where indicated or where required due to loading, in addition to the minimum SJI requirements. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.
2.06 FIELD QUALITY CONTROL
A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect field welds and bolted connections and to perform field tests and inspections and prepare test and inspection reports.
B. Field welds will be visually inspected according to AWS D1.1/D1.1M.
C. In addition to visual inspection, field welds will be tested according to AWS D1.1/D1.1M and the following procedures, as applicable:
   4. Liquid Penetrant Inspection: ASTM E 165.
D. Bolted connections will be visually inspected.
E. High-strength, field-bolted connections will be tested and verified according to procedures in RCSC’s "Specification for Structural Joints Using ASTM A 325 or ASTM A 490 Bolts."
F. Correct deficiencies in Work that test and inspection reports have indicated are not in compliance with specified requirements.
G. Additional testing will be performed to determine compliance of corrected Work with specified requirements.

2.07 REPAIRS AND PROTECTION
A. Repair damaged galvanized coatings on galvanized items with galvanized repair paint according to ASTM A 780 and manufacturer’s written instructions.
B. Touchup Painting: After installation, promptly clean, prepare, and prime or reprime field connections, rust spots, and abraded surfaces of prime-painted joists, bearing plates, abutting structural steel, and accessories.
   1. Clean and prepare surfaces by hand-tool cleaning, SSPC-SP 2, or power-tool cleaning, SSPC-SP 3.
   2. Apply a compatible primer of same type as shop primer used on adjacent surfaces.
C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that joists and accessories are without damage or deterioration at time of Substantial Completion.

END OF SECTION
SECTION 05 3100
STEEL DECK

PART 1 GENERAL

1.01 RELATED DOCUMENTS
A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY
A. This Section includes the following:
   1. Roof deck.
   2. Composite floor deck.
B. Work Included
   1. Furnish all labor and materials required to fabricate, deliver and install steel roof deck and accessories including formed steel cant strips, eave strips, valley strips, sump pans, edge closures, pour stops, reinforcing plates and related accessories.
   2. Furnish all labor and materials required to fabricate, deliver and install steel floor deck and accessories including formed steel end closures, edge forms, flashings, and reinforcing plates, headed shear studs, and related accessories.
C. Related Sections include the following:
   1. Division 3 Section "Cast-in-Place Concrete" for concrete fill.
   2. Division 5 Section "Structural Steel" for shop- and field-welded shear connectors.
   3. Division 5 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.

1.03 SUBMITTALS
A. Submittals for Review:
   1. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.
   2. Product Data: For each type of deck, accessory, and product indicated. Provide deck dimensions, sectional properties, uplift resistance and diaphragm capacity for specified fastener layout and support spacing, and finishes.
B. Submittals for Information:
   1. Product Certificates: For each type of steel deck, signed by product manufacturer. Certify that products comply with SDI, UL and ICBO standards as specified.
   2. Manufacturer’s installation instructions.
   3. Welding certificates: For each welder employed on the Work.
   4. Field quality-control test and inspection reports.
   5. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:
      a. Power-actuated mechanical fasteners.
   6. ICBO Research/Evaluation Reports: Deck units shall be approved by the International Conference of Building Officials and shall have a corresponding report from ICBO.
   7. Deck units shall be classified by Underwriter's Laboratory, Inc. and shall be labeled and marked as required by UL, indicating manufacturer testing and inspection.

1.04 QUALITY ASSURANCE
A. Installer: Company specializing in performing the work of this Section with minimum 5 years documented experience.
B. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

C. Fire-Test-Response Characteristics: Where indicated, provide steel deck units identical to those tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
   1. Fire-Resistance Ratings: Indicated by design designations of applicable testing and inspecting agency.
   2. Steel deck units shall be identified with appropriate markings of applicable testing and inspecting agency.

D. Comply with applicable provisions of the following specifications and documents.
   1. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."
   2. SDI (Steel Deck Institute) - Design Manual for Composite Decks, Form Decks, Roof Decks, Cellular Metal Floor Deck with Electrical Distribution.
   3. SSPC (Steel Structures Painting Council) - Painting Manual.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into 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. Steel Deck:
      a. ASC Profiles, Inc.
      c. Consolidated Systems, Inc.
      d. DACS, Inc.
      e. D-Mac Industries Inc.
      f. Epic Metals Corporation.
      g. Marlyn Steel Decks, Inc.
      h. New Millennium Building Systems, LLC.
      i. Nucor Corp.; Vulcraft Division.
      j. Roof Deck, Inc.
      k. United Steel Deck, Inc.
      l. Valley Joist; Division of EBSCO Industries, Inc.
      m. Verco Manufacturing Co.
      n. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.02 ROOF DECK

A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:
   1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.

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STEEL DECK
2. Deck Profile: As indicated.
3. Profile Depth: As indicated.
4. Design Uncoated-Steel Thickness: As indicated.
5. Span Condition: Triple span or more.
6. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.03 COMPOSITE FLOOR DECK

A. Composite Steel Floor Deck: Fabricate panels, with integrally embossed or raised pattern ribs and interlocking side laps, to comply with "SDI Specifications and Commentary for Composite Steel Floor Deck," in SDI Publication No. 30, with the minimum section properties indicated, and with the following:
1. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.
2. Profile Depth: As indicated.
3. Design Uncoated-Steel Thickness: As indicated.
4. Span Condition: Triple span or more.

2.04 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.
B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.
1. Mechanical Fasteners: Galvanized hardened (Stainless) steel, self tapping "Teks" screws, manufactured by Illinois Tool Works, Inc., Buildex Division, or equal. Size shall be #10 minimum, unless noted otherwise.
2. Powder Actuated Fasteners: Zinc coated fastener with .145 inch shank diameter and 1 1/4 inch shank length. X-DNI pin as manufacturer by Hilti, or equal.
C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.
D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.
E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.
F. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 30 for overhang and slab depth.
G. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.
H. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.
I. Weld Washers: Uncoated steel sheet, shaped to fit deck rib, [0.0598 inch] [0.0747 inch] thick, with factory-punched hole of 3/8-inch minimum diameter.
J. Recessed Sump Pans: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, with 3-inch wide flanges and level recessed pans of 1-1/2-inch minimum depth, sealed watertight. For drains, cut holes in the field.
K. Flat Sump Plate: Single-piece steel sheet, 0.0747 inch thick, of same material and finish as deck, sealed watertight. For drains, cut holes in the field.
L. Galvanizing Repair Paint: ASTM A 780.
M. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.
PART 3 EXECUTION

3.01 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.02 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer’s written instructions, and requirements in this Section.
B. Install temporary shoring before placing deck panels, if required to meet deflection limitations.
C. Locate deck bundles to prevent overloading of supporting members.
D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.
   1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.
E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.
F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer’s written instructions.

3.03 ROOF-DECK INSTALLATION

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:
   1. Weld Diameter: 5/8 inch or as indicated, nominal.
   2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds as indicated.
B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals as indicated, and as follows:
   1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:
   1. End Joints: Lapped 2 inches minimum.
D. Roof Sump Pans and Sump Plates: Install over openings provided in roof deck and mechanically fasten flanges to top of deck. Space mechanical fasteners not more than 12 inches apart with at least one fastener at each corner.
   1. Install reinforcing channels or zees in ribs to span between supports and mechanically fasten.
E. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer’s written instructions. Mechanically fasten to substrate to provide a complete deck installation.
   1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.
F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

G. Architectural finishes and mechanical, electrical, and plumbing equipment shall not be hung directly from the metal deck.

3.04 FLOOR-DECK INSTALLATION

A. Fasten floor-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated and as follows:
   2. Weld Spacing: Weld edge ribs of panels at each support. Space additional welds an average of 12 inches apart, but not more than 18 inches apart.
   3. Weld Spacing: Space and locate welds as indicated.
   4. Welds may be omitted if stud shear connectors are provided at same or closer spacing.

B. Fasten deck to concrete support members at ends and intermediate supports with powder actuated fasteners at 12 inches maximum spacing if deck spans parallel to the supporting member and at every other flute if the deck spans perpendicular to the supporting member.

C. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of half of the span or 36 inches, and as follows:
   1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
   2. Mechanically clinch or button punch.

D. End Bearing: Install deck ends over supporting steel frame with a minimum end bearing of 1-1/2 inches. Install deck on masonry and concrete support surfaces with 3 inch minimum bearing. Provide end joints as follows:
   1. End Joints: Butted.

E. Pour Stops and Girder Fillers: Weld steel sheet pour stops and girder fillers to supporting structure according to SDI recommendations, unless otherwise indicated.
   1. Install wet concrete stops at floor edges and around openings and penetrations upturned to top surface of slab, to contain wet concrete. If size of stop is not shown on the Drawings, provide stops of sufficient strength to deflect no more than 1/8 inch vertically or horizontally.

F. Install 6 inch minimum wide sheet steel cover plates, of same thickness as deck, where deck changes direction. Fusion weld or mechanically fasten plate to deck at 12 inches maximum spacing.

G. Floor-Deck Closures: Weld steel sheet column closures, cell closures, and Z-closures to deck, according to SDI recommendations, to provide tight-fitting closures at open ends of ribs and sides of deck.

H. Position floor drain pans with flange bearing on top surface of deck. Fusion weld at each deck flute.

3.05 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.
3.06 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION
SECTION 05 4000
COLD FORMED METAL FRAMING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Load bearing formed steel stud exterior wall framing.

B. Formed steel joist framing and bridging.

1.02 REFERENCES

A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; current edition.


D. ASTM C 955 - Standard Specification for Load-Bearing (Transverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Panel Products and Metal Plaster Bases; current edition.


1.03 SYSTEM DESCRIPTION

A. Size components to withstand design loads in conformance with applicable codes.

1. Refer to structural drawings for design wind loads.

B. Horizontal Deflection: Design to permit maximum deflection of 1/600 of span.

C. Vertical Deflection: Design non-axial loadbearing framing to accommodate not less than 3/8 in vertical deflection.

D. Design wall system to provide for movement of components without damage, failure of joint seals, undue stress on fasteners, or other detrimental effects when subject to seasonal or cyclic day/night temperature ranges.

E. Design system to accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.

1. Design stud connections to withstand live load deflections of L/240 for primary building structural members.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.

C. Product Data: Provide manufacturer's data on factory-made framing connectors, showing compliance with requirements.
D. Shop Drawings: Indicate component details, including widths and gages of studs and joists, framed openings, bearing, anchorage, loading, welds, and type and location of fasteners, and accessories or items required of related work.
   1. Indicate stud, floor joist, ceiling joist, roof joist, and roof rafter layout.
   2. Describe method for securing studs to tracks and for bolted framing connections.
   3. Provide calculations for loadings and stresses of specially fabricated framing that have been stamped by a Professional Structural Engineer licensed in the State of Texas.
   4. Provide details and calculations for factory-made framing connectors, stamped by a Professional Structural Engineer licensed in the State of Texas.
   5. Provide keyed plans depicting stud gage and spacing for all walls, stamped by a Professional Structural Engineer licensed in the State of Texas.

E. Product data for thermal insulation strips.

F. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention.

G. Manufacturer certification that provided materials contain 50% recycled content. Provide documentation at time of initial submittal listing all material costs, recycled contents and material origination location for LEED documentation. Provide documentation that products are produced and shipped from within 500 mile radius of project site.

1.05 QUALITY ASSURANCE

A. Calculate structural properties of framing members in accordance with requirements of AISI North American Specification for the Design of Cold-Formed Steel Structural Members.

B. Manufacturer: Company specializing in manufacturing the types of products specified in this section, and with minimum five years of documented experience.

C. Installer: Company specializing in performing the work of this section with minimum five years of experience.

D. Design structural elements, spacing and sizing off all metal studs on interior and exterior of project under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in Texas.

1.06 PROJECT CONDITIONS

A. Verify that field measurements are as indicated on the drawings.

1.07 RECYCLED CONTENT

A. Provide products and accessories containing not less than 33 percent recycled content.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Framing, Connectors, and Accessories:
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FRAMING MATERIALS

A. Studs and Track: ASTM C 955; studs formed to channel, "C", or "Sigma" shape with punched web; U-shaped track in matching nominal width and compatible height.
1. Gage and depth: As required to meet specified performance levels and design detail compatibility. Do not exceed stud widths indicated on drawings without architect approval.
2. Galvanized in accordance with ASTM A 653/A 653M G90/Z275 coating.

   1. Base Metal: As required to meet specified performance levels and design detail compatibility.
   2. Gage and depth: As required to meet specified performance levels and design detail compatibility. Do not exceed joist widths indicated on drawings without architect approval.

C. Framing Connectors: Factory-made formed steel sheet, ASTM A 653/A 653M SS Grade 50, with G60/Z180 hot dipped galvanized coating and factory punched holes.
   1. Structural Performance: Maintain load and movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold Formed Steel Structural Members; minimum 16 gage, 0.06 inch thickness.
   2. Movement Connections: Provide mechanical anchorage devices that accommodate movement using slotted holes, screws and anti-friction bushings, while maintaining structural performance of framing. Provide movement connections where indicated on drawings.
   3. Provide non-movement connections for tie-down to foundation, floor-to-floor tie-down, roof-to-wall tie-down, joist hangers, gusset plates, and stiffeners.

2.03 ACCESSORIES

A. Bracing, Furring, Bridging: Formed sheet steel, thickness determined for conditions encountered; finish to match framing components.

B. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.

2.04 FASTENERS

A. Self-Drilling, Self-Tapping Screws, Bolts, Nuts and Washers: Hot dip galvanized per ASTM A 153/A 153M.
   1. Provide fasteners containing 100% recycled materials.

B. Anchorage Devices: Power actuated.

C. Welding: In conformance with AWS D1.1.

2.05 SHOP FABRICATED ASSEMBLIES

A. Shop fabricate metal framing to the greatest extent possible.

B. Fabricate assemblies of framed sections of sizes and profiles required; with framing members fitted, reinforced, and braced to suit design requirements.

C. Fit and assemble in largest practical sections for delivery to site, ready for installation.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that building framing components are ready to receive work.

3.02 INSTALLATION OF STUDS

A. Install components in accordance with manufacturers’ instructions and ASTM C 1007 requirements.
B. Align floor and ceiling tracks; locate to wall layout. Secure in place with fasteners at maximum 24 inches on center. Coordinate installation of sealant with floor and ceiling tracks.

C. Place studs at 16 inches on center; not more than 2 inches from abutting walls and at each side of openings. Connect studs to tracks using fastener method.

D. Construct corners using minimum of three studs. Install double studs at wall openings, door and window jambs.

E. Install load bearing studs full length in one piece. Splicing of studs is not permitted.

F. Install load bearing studs, brace, and reinforce to develop full strength and achieve design requirements.

G. Coordinate placement of insulation in multiple stud spaces made inaccessible after erection.

H. Install intermediate studs above and below openings to align with wall stud spacing.

I. Provide deflection allowance in stud track, directly below horizontal building framing at non-load bearing framing.

J. Attach cross studs to studs for attachment of fixtures anchored to walls.

K. Install framing between studs for attachment of mechanical and electrical items, and to prevent stud rotation.

L. Touch-up field welds and damaged galvanized surfaces with primer.

3.03 INSTALLATION OF JOISTS AND PURLINS

A. Install framing components in accordance with manufacturer's instructions and approved submittals.

B. Make provisions for erection stresses. Provide temporary alignment and bracing.

C. Place joists at 16 inches o.c.; not more than 2 inches from abutting walls. Connect joists to supports using fastener method.

D. Set floor and ceiling joists parallel and level, with lateral bracing and bridging.

E. Locate joist end bearing directly over load bearing studs or provide load distributing member to top of stud track.

F. Provide web stiffeners at reaction points.

G. Touch-up field welds and damaged galvanized surfaces with primer.

3.04 INSTALLATION OF THERMAL INSULATION STRIPS

A. Install thermal insulation strips to interior surface of studs in accordance with manufacturer's instructions and approved submittals.

3.05 ERECTION TOLERANCES

A. Maximum Variation from True Position: 1/8 inch.

B. Maximum Variation of any Member from Plane: 1/8 inch.

END OF SECTION
SECTION 05 5100
METAL STAIRS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Stairs with concrete filled treads.
B. Structural steel stair framing and supports.
C. Handrails and guards, horizontal and vertical.

1.02 REFERENCE STANDARDS

H. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; current edition.
L. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; current edition.
N. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; current edition.
O. SSPC-SP 2 - Hand Tool Cleaning; Society for Protective Coatings; current edition.

1.03 SUBMITTALS

A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
   1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
   2. Include the design engineer's stamp or seal on each sheet of shop drawings.

C. Welders' Certificates.

1.04 PERFORMANCE REQUIREMENTS
A. Provide complete stair assemblies complying with the applicable codes, and as follows.
   1. Uniform Live Load: 100 pounds per square foot.
   2. Deflection: Limit deflection of treads, platform and framing members to L/360 or ¼ inch, whichever is less.

1.04 QUALITY ASSURANCE
A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in Texas, or personnel under direct supervision of such an engineer.

B. Welder Qualifications: Show certification of welders employed on the Work, verifying AWS qualification within the previous 12 months.

PART 2 PRODUCTS
2.01 METAL STAIRS - GENERAL
A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
   1. Regulatory Requirements: Provide stairs and railings complying with the most stringent requirements of local, state, and federal regulations; where requirements of the contract documents exceed those of regulations, comply with the contract documents.
   2. Structural Design: Provide complete stair and railing assemblies complying with the applicable local code.
   3. Dimensions: As indicated on drawings.
   4. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
   5. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
   6. Separate dissimilar metals using paint or permanent tape.

B. Metal Jointing and Finish Quality Levels:
   1. Commercial: Exposed joints as inconspicuous as possible, whether welded or mechanical; underside of stair not covered by soffit is considered exposed to view.
      a. Welded Joints: Intermittently welded on back side, filled with body putty, and sanded smooth and flush.
      b. Welds Exposed to View: Ground smooth and flush.
      c. Mechanical Joints: Butted tight, flush, and hairline.
      d. Bolts Exposed to View: Countersunk flat or oval head bolts; no exposed nuts.
      e. Exposed Edges and Corners: Eased to small uniform radius.
      f. Metal Surfaces to be Painted: Sanded or ground smooth, suitable for satin or matte finish.

C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.

D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.
2.02 METAL STAIRS WITH METAL TREADS

A. Jointing and Finish Quality Level: Commercial, as defined above.

B. Risers: Closed.

C. Treads: Metal pan with field-installed concrete fill.
   1. Concrete Depth: 1-1/2 inches, minimum.
   2. Tread Pan Material: Steel sheet.
   3. Tread Pan Thickness: As required by design; 14 gage, 0.075 inch minimum.

D. Risers: Same material and thickness as tread pans.
   1. Nosing Depth: Not more than 1-1/2 inch overhang.
   2. Nosing Return: Flush with top of concrete fill, not more than 1/2 inch wide.

E. Stringers: Rolled steel tubes.
   1. Stringer Depth: As indicated on drawings.
   2. End Closure: Sheet steel of same thickness as risers welded across ends.

F. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.

G. Railings: Steel pipe railings.

H. Finish: Shop- or factory-prime painted.

2.03 HANDRAILS AND GUARDS

A. Wall-Mounted Rails: Round pipe rails unless otherwise indicated.

B. Guards: Horizontal Type
   1. Top Rails: Round pipe or tube rails unless otherwise indicated.
      a. Outside Diameter: 1-1/4 inch, minimum, to 1-1/2 inches, maximum.
   2. Infill at Pipe Railings: Pipe rails sloped parallel to stair.
      a. Outside Diameter: 1 inch.
      b. Material: Steel pipe, round.
      c. Vertical Spacing: Maximum 4 inches on center.
      d. Jointing: Welded and ground smooth and flush.
   3. End and Intermediate Posts: Same material and size as top rails.
      a. Horizontal Spacing: As indicated on drawings.
      b. Mounting: Welded to top surface of stringer.

2.04 MATERIALS

A. Steel Sections: ASTM A 36/A 36M.

B. Steel Tubing: ASTM A500 or ASTM A501 structural tubing, round and shapes as indicated.

C. Steel Plates: ASTM A6/A6M or ASTM A283/A283M.


E. Galvanized Steel Sheet: ASTM A653/A653M, Structural Steel (SS) Grade 33/230 with G40/Z120 coating.

F. Steel Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, galvanized to ASTM A 153/A 153M where connecting galvanized components.

G. Welding Materials: AWS D1.1; type required for materials being welded.
H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.05 SHOP FINISHING

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
B. Do not prime surfaces in direct contact with concrete or where field welding is required.
C. Prime Painting: Use specified shop- and touch-up primer.
   1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.
   2. Number of Coats: One.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. When field welding is required, clean and strip primed steel items to bare metal.

3.03 INSTALLATION

A. Install components plumb and level, accurately fitted, free from distortion or defects.
B. Provide anchors, plates, angles, hangers, and struts required for connecting stairs to structure.
C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1.
E. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.
F. Obtain approval prior to site cutting or creating adjustments not scheduled.
G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.

3.04 TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.

END OF SECTION
SECTION 05 5133.23

ALTERNATING TREAD STEEL LADDER

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fabricate and Install metal alternating tread stair assemblies in accordance with the requirements set forth in this section.

1.02 RELATED REQUIREMENTS

A. Section 07 7233 – Roof Hatches.

1.03 REFERENCES

A. American Institute of Steel Construction (AISC)
   1. Manual of Steel Construction
   2. Code of Standard Practice

B. American Iron and Steel Institute
   1. Type 304 Stainless Steel (UNS S30400)
   2. Type 1010 Stainless Steel (UNS G10100)


E. ASTM A193/A193M-03 - Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service

F. ASTM A240/A240M-03b - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

G. ASTM A269-04 Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service

H. ASTM A276-03 Standard Specification for Stainless Steel Bars and Shapes


J. ASTM A500 – Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes


L. ASTM A554-03 – Standard Specification for Welded Stainless Steel Mechanical Tubing


N. ASTM A569/A569M-91a – Standard Specification for Steel, Carbon (.15 Maximum, Percent), Hot-Rolled Sheet and Strip Commercial Quality (superseded by A1011)

O. ASTM A780-01 - Standard Practice for Repair of Damaged and Un-coated Areas of Hot-Dip Galvanized Coatings

P. ASTM A786/A786M-00b Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates

Q. ASTM A1011/A1011M-03 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability
1.04 PERFORMANCE REQUIREMENTS

A. Alternating Tread Stair Treads: shall be capable of withstanding a single concentrated 1000 pound load without permanent deformation; or 100 pounds per square foot or 300 pounds on an area of 4 square inches without exceeding the allowable working stress of the material.

B. Alternating Tread Stair Guard/Handrail: shall be capable of withstanding a single concentrated load of 200 pounds or a uniform load of 50 pounds per linear foot applied in any direction at any point on the rail without exceeding the allowable working stress of the material.

C. Alternating Tread Stair Stringers: shall be capable of withstanding a single concentrated load of 1000 pounds at any point on the stair without permanent deformation; or a uniform live loading of 100 pounds per square foot applied in a downward direction to all tread surfaces or a 300 pound load on an area of 4 square inches without exceeding the allowable working stress of the material.

1.05 CONSTRUCTION REQUIREMENTS

A. Landings, Treads, and Mounting Base: shall be stamped and formed from single piece material. Stock shapes, hand forming, or welded remnants shall not be permitted. All stamped parts shall have integrally formed rigidizing bends and shall be spot welded to stringers of like material.

B. Welds: shall be a minimum of 6 welds per tread, and 12 welds each on the landing and mounting base. Each weld shall be quality controlled and be capable of withstanding a minimum of 2800 lbs. in shear.

C. Pedestrian Surfaces: shall be punched through with upset non-skid openings.

D. Riser Spacing: shall be equally spaced to within 3/16" for adjacent risers and to within 3/8" for any two non-adjacent risers on a stair.

E. Guards and Handrails: shall be contoured for body guidance and underarm support and shall be attached to the outside stringers and landings by bolting.

F. Landing Reinforcement: shall be with 1/4" steel angle notched and punched and factory welded to the landing at the points of a guard or handrail attachment.

G. Rubber Foot Divider: shall be affixed to the central portion of the landing. A rubber bumper strip shall be attached or will be provided for field attaching to the central stringer.

1.06 DIMENSIONS

A. Alternating Tread Stair Angle: 56 or 68 degrees from horizontal as specified in the drawings.

B. Vertical Drop: the change in elevation, as shown in the drawings, between the upper finished floor surface where the top landing will be attached and the lower finished floor surface where the base of the alternating tread stair will be secured.

1.07 SUBMITTALS

A. Submit in accordance with Section 01 3000 – Administrative Requirements.

B. Dimensioned drawings describing all components required for a complete installation to be submitted for approval prior to fabrication.
1.08 DELIVERY STORAGE AND HANDLING
A. Deliver materials to the job-site in good condition and properly protected against damage to finished surfaces.
B. Store material in a location and manner to avoid damage. Do not stack components. Lay out components on firm foundation material such that bending can not occur.
C. Store metal components in a clean dry location, away from uncured concrete, cement, or masonry products, acids, oxidizers, rain water, or any other chemical or substance that might damage the material or finish.
D. Plan work and storage locations to keep on-site handling to a minimum.
E. Exercise particular care to avoid damage to material finishes or unprotected surfaces when handling.

PART 2- PRODUCTS

2.01 ACCEPTABLE MANUFACTURER:
A. Basis of Design Manufacturer: Lapeyre Stair, Inc: www.lapeyrestair.com
B. Substitutions permitted under provisions of Section 01 6000 – Product Requirements.

2.02 MATERIALS
A. Carbon Steel:
   1. Treads: 13 Gauge AISI 1010/15 HRPO per ASTM A569 / A1011 grade 36.
   2. Landing & Foot Stampings: 11 Gauge AISI 1010/15 per ASTM A569 / A1011 grade 36.
   3. Top Landing Support Clips: L2 x 2 x ¼” x 4” lg. with 5/8” diameter round holes and 5/8” x 1” slot holes, ASTM A569/A1011 grade 36.
   4. Stringers:
      a. 2” x 1 3/4” x 11 Gauge U section; AISI 1010/15 per ASTM A569/A1011 grade 36 for 56 degree stairs under 10 vertical feet and for 68 degree stairs under 12 vertical feet.
      b. 3” x 1 3/4” x 11 Gauge U section; AISI 1010/15 per ASTM A569/A1011 grade 36 for 56 degree stairs over 10 vertical feet and for 68 degree stairs over 12 vertical feet.
   5. Handrails: 1 1/2” OD x 0.095” AISI 1010/15 CS per ASTM A569/A1011 cold drawn, fully annealed tube per ASTM A513 grade 1008 or higher As-welded tubing or ASTM A500 Grade B.
B. Fasteners
   1. Bolts: Handrail to stringer; Hex Head SAE J429 Grade 5, ½” diameter x 13 TPI
   2. Landing to structure; Carriage Head A307 or Hex Head SAE J429 Grade 5, ½” diameter x 13 TPI.
   3. Nuts: ASTM A563 Grade 0.
   4. Washers ASTM F844
C. Miscellaneous Material
   2. Rubber Foot Divider: Solid neoprene.

2.03 FINISHES
A. Carbon Steel
   1. Safety Yellow Paint: Polyester TGIC Powder Coat
   2. Hot-Dip Galvanized: per ASTM A123

2.04 FABRICATION
A. General: Fabricate alternating tread steel stairs to conform with performance and construction requirements, and in accordance with approved shop drawings or dimensional prints. Fabricate and shop-assemble to greatest extent possible.
B. Carbon Steel: Gas metal arc welded with treads spot welded to stringers and bolt-on handrails with included bolts using the specified materials.

C. Stainless Steel: Gas tungsten arc welded and/or gas metal arc welded with treads spot welded to stringers and bolt-on handrails with included bolts using the specified materials.

PART 3 - EXECUTION

3.01 PREPARATIONS

A. Coordination: Coordinate start and installation of steel alternating tread stair with all other related and adjacent work. Installation shall not start until the construction has progressed to the point that weather conditions and remaining construction operations will not damage alternating tread stair installation.

B. Verification: Verify that dimensions and angle are correct and that substrate is in proper condition for alternating tread stair installation. Do not proceed with installation until all necessary corrections have been made.

3.02 INSTALLATION

A. If bumper has not been installed at the factory, install the bumper in accordance with the manufacturer's instructions (peel and stick).

B. Prepare mounting holes.

C. Position alternating tread stair with top tread at same elevation as upper finished floor or roof surface.

D. Secure alternating tread stair with not less than 2 bolts or studs at top and with not less than 2 at bottom of stair.

E. Touch up with matching paint any chipped or abraded damage to factory finish or

F. Touch up any damage to galvanized surfaces using galvanized repair paint in accordance with ASTM A780.

3.03 CLEAN-UP

A. Leave work area clean and free of debris.

END OF SECTION
SECTION 05 5200
HANDRAILS AND RAILINGS

PART 1  GENERAL

1.01 SECTION INCLUDES
A. Wall mounted handrails.
B. Free-standing railings at steps.
C. Other railings and guardrails shown on drawings.

1.02 RELATED SECTIONS
A. Section 03 3000 - Cast-in-Place Concrete: Placement of anchors in concrete.
B. Section 04 2200 - Unit Masonry Assemblies: Placement of anchors in masonry.
C. Section 09 2116 - Gypsum Board Assemblies: Placement of backing plates in stud wall construction.

1.03 REFERENCES

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

PART 2  PRODUCTS

2.01 RAILINGS - GENERAL REQUIREMENTS
A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E 985 and applicable local code.
B. Design railing assembly, wall rails, and attachments to resist the following loads at any point without damage or permanent set. Test in accordance with ASTM E 935.
   1. Uniform Load: 50 pounds per foot, applied in any direction.
   2. Concentrated Load: 200 pounds, applied in any direction.
C. Allow for expansion and contraction of members and building movement without damage to connections or members.
D. Dimensions: See drawings for configurations and heights.
   1. Top Rails and Wall Rails: 1-1/2 inches diameter, round.

E. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
   1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
   2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
   3. For anchorage to stud walls, provide backing plates, for bolting anchors.

F. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.

2.02 STEEL RAILING SYSTEM

A. Steel Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.

B. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.

C. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.

D. Straight Splice Connectors: Steel concealed spigots.

E. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

F. Finish: Powder coat baked enamel, factory applied

2.03 FABRICATION

A. Accurately form components to suit specific project conditions and for proper connection to building structure.

B. Fit and shop assemble components in largest practical sizes for delivery to site.

C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.

D. Welded Joints:
   1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
   2. Interior Components: Continuously seal joined pieces by continuous welds.
   3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 PREPARATION

A. Clean and strip primed steel items to bare metal where site welding is required.

B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.

C. Anchor railings securely to structure.

D. Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.

E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

3.04 ERECTION TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.

B. Maximum Offset From True Alignment: 1/4 inch.


END OF SECTION
SECTION 06 1000
ROUGH CARPENTRY

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Structural dimension lumber framing.
B. Subflooring.
C. Sheathing
D. Preservative treated wood materials.
E. Fire retardant treated wood materials.
F. Miscellaneous framing and sheathing.
G. Concealed wood blocking, nailers, and supports.

1.02 REFERENCE STANDARDS
E. PS 20 - American Softwood Lumber Standard; National Institute of Standards and Technology (Department of Commerce); 2005.

1.03 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide technical data on wood preservative materials and application instructions.

1.04 DELIVERY, STORAGE, AND HANDLING
A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS
A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
   1. Species: FSC Douglas Fir-Larch, unless otherwise indicated.
   2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.
   3. Lumber of other species or grades is acceptable provided structural and appearance characteristics are equivalent to or better than products specified.
B. Lumber fabricated from old growth timber is not permitted.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. Sizes: Nominal sizes as indicated on drawings, S4S.

B. Moisture Content: S-dry or MC19.

C. Stud Framing (2 by 2 through 2 by 6):
   1. Grade: No. 2.

D. Joist, Rafter, and Small Beam Framing (2 by 6 through 4 by 16):
   1. Machine stress-rated (MSR) as follows:
      a. $F_b$ (minimum extreme fiber stress in bending): 1350 psi.
      b. $E$ (minimum modulus of elasticity): 1,300,000 psi.
   2. Species: Douglas Fir-Larch FSC.

E. Miscellaneous Framing, Blocking, Nailers, Grounds, and Furring:
   1. Lumber: S4S, No. 2 or Standard Grade FSC.
   2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS

A. Subflooring: APA PRP-108: Rated Sheathing FSC.
   3. Thickness: 5/16 inch, nominal.

B. Underlayment: APA Underlayment; plywood, Exposure 2, 1/2 inch thick. Fully sanded faces at resilient flooring.

C. Roof Sheathing: APA PRP-108, Structural I Rated Sheathing, Exterior Exposure Class, and as follows:
   1. Span Rating: 24/0.
   2. Thickness: As indicated on drawings.

D. Communications and Electrical Room Mounting Boards: FSC Certified PS 1 A-C plywood A side out; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84; free of defects (knots and voids shall be considered a defect) shall be installed covering all walls. The plywood shall be installed 12 inches above finished floor. Plywood shall be mounted with the A side exposed to the interior of the room and the C side against the wall. Backboards shall be painted off-white in color leaving the UL fire-rating symbol unpainted and visible.

2.04 ACCESSORIES

A. Fasteners and Anchors:
   1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for high humidity and preservative-treated wood locations, unfinished steel elsewhere with 100% recycled content.
   2. Anchors: Expansion shield and lag bolt type for anchorage to solid masonry or concrete, recycled content 100%

B. Joist Hangers: Hot dipped galvanized steel, sized to suit framing conditions.

C. Sill Gasket on Top of Foundation Wall: 1/4 inch thick, plate width, closed cell plastic foam from continuous rolls.

D. Sill Flashing: As specified in Section 07 6200.

E. Subfloor Glue: Waterproof, solvent base, air cure type, cartridge dispensed.

F. Water-Resistive Barrier: No. 15 asphalt felt.
G. Building Paper: Water-resistant Kraft paper.

2.05 FACTORY WOOD TREATMENT

A. All interior rough carpentry items are to be fire retardant treated.

B. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
   1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
   2. Preservative-Treated Wood: Provide lumber and plywood marked or stamped by an ALSC-accredited testing agency, certifying level and type of treatment in accordance with AWPA standards.

C. Fire Retardant Treatment:
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.
   2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread rating of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
      a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
      b. All interior rough carpentry items are to be fire retardant treated.
      c. Treat rough carpentry items as indicated.
      d. Do not use treated wood in applications exposed to weather or where the wood may become wet.

D. Preservative Treatment:
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.
   2. Preservative Pressure Treatment of Lumber Above Grade: AWPA U1, Use Category UC3B, Commodity Specification A using waterborne preservative to 0.25 lb/cu ft retention.
      a. Kiln dry lumber after treatment to maximum moisture content of 19 percent.
      b. Treat lumber in contact with roofing, flashing, or waterproofing.
      c. Treat lumber in contact with masonry or concrete.
      d. Treat lumber less than 18 inches above grade.
      e. Treat lumber in other locations as indicated.

PART 3 EXECUTION

3.01 PREPARATION

A. Where wood framing bears on concrete foundations, install full width sill flashing continuous over top of foundation, lap ends of flashing minimum of 4 inches and seal.

B. Install sill gasket under sill plate of framed walls bearing on foundations; puncture gasket cleanly to fit tightly around protruding anchor bolts.

3.02 INSTALLATION - GENERAL

A. Select material sizes to minimize waste.
B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.

C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.03 FRAMING INSTALLATION

A. Set structural members level, plumb, and true to line. Discard pieces with defects that would lower required strength or result in unacceptable appearance of exposed members.

B. Make provisions for temporary construction loads, and provide temporary bracing sufficient to maintain structure in true alignment and safe condition until completion of erection and installation of permanent bracing.

C. Install structural members full length without splices.

D. Comply with member sizes, spacing, and configurations indicated, and fastener size and spacing indicated, but not less than required by applicable codes and AFPA Wood Frame Construction Manual.

E. Install horizontal spanning members with crown edge up and not less than 1-1/2 inches of bearing at each end.

F. Construct double joist headers at floor and ceiling openings and under wall stud partitions that are parallel to floor joists; use metal joist hangers unless otherwise detailed.

G. Provide bridging at joists in excess of 8 feet span as detailed. Fit solid blocking at ends of members.

H. Frame wall openings with two or more studs at each jamb; support headers on cripple studs.

3.04 BLOCKING, NAILERS, AND SUPPORTS

A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.

B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.

C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.

D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.

3.05 INSTALLATION OF CONSTRUCTION PANELS

A. Subflooring: Glue and nail to framing; staples are not permitted.

B. Underlayment: Secure to subflooring with nails and glue. 
1. Place building paper between floor underlayment and subflooring.

C. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
1. Attach panels to substrate as directed by Architect.

D. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
3. Install adjacent boards without gaps.

3.06 SITE APPLIED WOOD TREATMENT
   A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
   B. Allow preservative to dry prior to erecting members.

3.07 TOLERANCES
   A. Framing Members: 1/4 inch from true position, maximum.
   B. Surface Flatness of Floor: 1/8 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.
   C. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.08 CLEANING
   A. Waste Disposal: Comply with the requirements of Section 01732.
      1. Comply with applicable regulations.
      2. Do not burn scrap on project site.
      3. Do not burn scraps that have been pressure treated.
      4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or “waste-to-energy” facilities.
   B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
   C. Prevent sawdust and wood shavings from entering the storm drainage system.

END OF SECTION
SECTION 06 4116
PLASTIC LAMINATE FACED CABINETS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Custom fabricated, plastic laminate faced cabinet units.
B. Countertops.
C. Cabinet hardware.

1.02 REFERENCES
A. AHA A135.4 - Basic Hardboard; American Hardboard Association; current edition.

1.03 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate materials, component profiles and elevations, assembly methods, joint details, fastening methods, accessory listings, hardware location and schedule of finishes.
C. Product Data: Provide data for hardware accessories.
D. Samples: Submit two samples of drawer pulls and hinges, illustrating hardware finish.

1.04 QUALITY ASSURANCE
A. Perform work in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Custom quality.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.
C. It is the Contractor’s responsibility to coordinate and locate power, data, telephone, security and all other devices with wall trim plates with millwork, cabinets and casework.

1.05 DELIVERY, STORAGE, AND PROTECTION
A. Protect units from moisture damage.

1.06 ENVIRONMENTAL REQUIREMENTS
A. During and after installation of work of this section, maintain the same temperature and humidity conditions in building spaces as will occur after occupancy.

PART 2 PRODUCTS

2.01 WOOD MATERIALS
A. Softwood Lumber: Graded in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Custom; average moisture content of 6 percent; pine species FSC certified.
B. Hardwood Lumber: Graded in accordance with AWI Architectural Woodwork Quality Standards Illustrated, Custom; average moisture content of 6 percent; Birch species quarter sawn FSC certified.

2.02 PANEL MATERIALS
A. Hardwood Plywood and Face Veneers: HPVA HP-1 and as required to meet AWI Quality Standards, FSC certified.
B. Hardboard: AHA A135.4; Pressed wood fiber with resin binder, Class 1 - Tempered, 1/4 inch thick, smooth two sides (S2S); use for drawer bottoms and other components indicated on drawings, FSC certified.

2.03 LAMINATE MATERIALS
A. Manufacturers:
   4. Substitutions: Permitted under provisions of Section 01 6000.
B. Plastic Laminate: In accordance with AWI Quality Standards Illustrated, 0.048 inch General Purpose quality, colors as selected by Architect.
C. Laminate Backing Sheet: 0.020 inch Backing Sheet grade, undecorated plastic laminate.
D. All exposed ends to view are to have laminate material installed. Confirmation of this directive is to be documented on all submittals.

2.04 ACCESSORIES
A. Adhesive: Type recommended by laminate manufacturer to suit application.
B. Fasteners: Size and type to suit application.
C. Concealed Joint Fasteners: Threaded steel.
D. Glass: Type specified in Section 08 8000.

2.05 HARDWARE
A. Hardware: BHMA A156.9, types as indicated for quality grade specified.
B. Adjustable Shelf Supports: Standard side-mounted system using recessed metal shelf standards or multiple holes for pin supports and coordinated self rests, satin chrome finish, for nominal 1 inch spacing adjustments.
C. Drawer and Door Pulls: "U" shaped wire pull, steel with satin finish, 4 inch centers.
D. Cabinet Locks: Keyed cylinder, two keys per lock, master keyed, steel with satin finish.
E. Catches: Magnetic.
F. Drawer Slides:
   1. Type: Full extension.
   2. Static Load Capacity: Heavy Duty grade.
   4. Stops: Integral type.
   5. Features: Provide self closing/stay closed type.
   6. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.
G. Hinges: European style concealed self-closing type, steel with satin finish.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

2.06 COUNTERTOPS
   A. Specified in Section 12 3600.

2.07 FABRICATION
   A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
   B. Fit shelves, doors, and exposed edges with 3/8 inch matching hardwood edging. Use one piece for full length only.
   C. Cap exposed plastic laminate finish edges with material of same finish and pattern.
   D. Door and Drawer Fronts: 3/4 inch thick; flush overlay style.
   E. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
   F. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Locate counter butt joints minimum 2 feet from sink cut-outs.
   G. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
   H. Mechanically fasten back splash to countertops with steel brackets at 16 inches on center.
   I. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Prime paint cut edges.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify adequacy of backing and support framing.
   B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION
   A. Set and secure casework in place; rigid, plumb, and level.
   B. Use cabinet attachments in concealed locations for wall mounted components.
   C. Use concealed joint fasteners to align and secure adjoining cabinet units.
   D. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
   E. Secure cabinet and counter bases to floor using appropriate angles and anchorages.
   F. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.

3.03 ADJUSTING
   A. Adjust installed work.
   B. Adjust moving or operating parts to function smoothly and correctly.
3.04 CLEANING

A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

END OF SECTION
SECTION 07 13 26
SELF-ADHERING SHEET WATERPROOFING

PART I - GENERAL

1.01 SECTION INCLUDES
A. This Section includes rubberized-asphalt sheet waterproofing.

1.02 PERFORMANCE REQUIREMENTS
A. Provide waterproofing that prevents the passage of water.

1.03 SUBMITTALS
A. Product Data: Include manufacturer’s written instructions for evaluating, preparing, and treating substrate, technical data, and tested physical and performance properties of waterproofing.
B. Shop Drawings: Show locations and extent of waterproofing. Include details for substrate joints and cracks, sheet flashings, penetrations, inside and outside corners, tie-ins with adjoining waterproofing, and other termination conditions.
C. Samples: For the following products:
   1. 12-by-12-inch square of waterproofing and flashing sheet.
D. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.
E. Product Test Reports: From a qualified independent testing agency indicating and interpreting test results of waterproofing for compliance with requirements, based on comprehensive testing of current waterproofing formulations.
F. Sample Warranty: Copy of special waterproofing manufacturer’s warranty stating obligations, remedies, limitations, and exclusions before starting waterproofing.

1.04 QUALITY ASSURANCE
A. Installer Qualifications: A qualified installer who is acceptable to waterproofing manufacturer to install manufacturer’s products.
B. Source Limitations: Obtain waterproofing materials, protection course, through one source from a single manufacturer.
C. General Contractor is responsible for coordination of all waterproofing and dampproofing products. General Contractor is to ensure that all waterproofing and/or dampproofing products are compatible and will not void manufacturer warranties.
D. General Contractor is to arrange for manufacturer inspection to generate field report documenting acceptable practices for this scope of work. Generated field report to be posted on web based file sharing system.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Deliver liquid materials to Project site in original packages with seals unbroken, 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 packages in a clean, dry, protected location and within temperature range required by waterproofing manufacturer.
C. Remove and replace liquid materials that cannot be applied within their stated shelf life.
D. Store rolls according to manufacturer’s written instructions.

E. Protect stored materials from direct sunlight.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: Apply waterproofing within the range of ambient and substrate temperatures recommended by waterproofing manufacturer. Do not apply waterproofing to a damp or wet substrate.
   1. Do not apply waterproofing in snow, rain, fog, or mist.

B. Maintain adequate ventilation during preparation and application of waterproofing materials.

1.07 WARRANTY

A. Special Manufacturer’s Warranty: Written warranty, signed by waterproofing manufacturer agreeing to replace waterproofing material that does not comply with requirements or that does not remain watertight during specified warranty period.
   1. Warranty does not include failure of waterproofing due to failure of substrate prepared and treated according to requirements or formation of new joints and cracks in substrate exceeding 1/16 inch (1.6 mm) in width.
   2. Warranty Period: Five years after date of Substantial Completion.

B. Special Installer’s Warranty: Written waterproofing Installer’s warranty, signed by Installer, covering Work of this Section, for warranty period of two years.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide one of the following products:
   1. Rubberized-Asphalt Sheet Waterproofing:
      b. Carlisle Corporation, Carlisle Coatings & Waterproofing Div.; CCW 701.
      e. T. C. Miradri; Miradri.
      f. Polyguard Products, Inc.; Polyguard 650.

2.02 SELF ADHERING WATERPROOF MEMBRANE

A. Rubberized-Asphalt Sheet: 60-mil-(1.5-mm-) thick, self-adhering sheet consisting of 56 mils (1.4 mm) of rubberized asphalt laminated to a 4-mil-(0.10-mm) thick, polyethylene film with release liner on adhesive side and formulated for application with primer or surface conditioner that complies with VOC limits of authorities having jurisdiction.
   1. Physical Properties: As follows, measured per standard test methods referenced:
      a. Tensile Strength: 250 psi (1.7 MPa) minimum; ASTM D 412, Die C, modified.
      b. Ultimate Elongation: 300 percent minimum; ASTM D 412, Die C, modified.
      c. Low-Temperature Flexibility: Pass at minus 20 deg F (minus 29 deg C); ASTM D 1970.
      d. Crack Cycling: Unaffected after 100 cycles of 1/8-inch (3-mm) movement; ASTM C 836.
      e. Puncture Resistance: 40 lbf (180 N) minimum; ASTM E 154.
      f. Hydrostatic-Head Resistance: 150 feet (45 m) minimum; ASTM D 5385.
      g. Water Absorption: 0.15 percent weight-gain maximum after 48-hour immersion at 70 deg F (21 deg C); ASTM D 570.
      h. Vapor Permeance: 0.05 perms (2.9 ng/Pa x s x sq. m); ASTM E 96, Water Method.

2.03 AUXILIARY MATERIALS

A. General: Furnish auxiliary materials recommended by waterproofing manufacturer for intended use and compatible with sheet waterproofing.
1. Furnish liquid-type auxiliary materials that comply with VOC limits of authorities having jurisdiction.

B. Primer: Liquid waterborne primer recommended for substrate by manufacturer of sheet waterproofing material.

C. Surface Conditioner: Liquid, waterborne surface conditioner recommended for substrate by manufacturer of sheet waterproofing material.

D. Sheet Strips: Self-adhering, rubberized-asphalt composite sheet strips of same material and thickness as sheet waterproofing.

E. Liquid Membrane: Elastomeric, two-component liquid, cold fluid applied, trowel grade or low viscosity.

F. Substrate Patching Membrane: Low-viscosity, two-component, asphalt-modified coating.

G. Mastic, Adhesives, and Tape: Liquid mastic and adhesives, and adhesive tapes recommended by waterproofing manufacturer.
   1. Detail Tape: Two-sided, pressure-sensitive, self-adhering reinforced tape, 4-1/2 inches (114 mm) wide, with a tack-free protective adhesive coating on one side and release film on self-adhering side.
   2. Detail Strips: 62.5-mil (1.58-mm) thick, felt-reinforced self-adhesive strip, 9 inches (230 mm) wide, with release film on adhesive side.

H. Metal Termination Bars: Aluminum bars, approximately 1 by 1/8 inch (25 by 3 mm) thick, predrilled at 9-inch (225-mm) centers.

I. Protection Course: Two-part prefabricated geocomposite drain consisting of a formed polystyrene core covered on one side with polypropylene filter fabric.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance.
   1. Verify that concrete has cured and aged for minimum time period recommended by waterproofing manufacturer. 2. Verify that concrete is visibly dry and free of moisture. Test for capillary moisture by plastic sheet method according to ASTM D 4263.
   3. Verify that compacted subgrade is dry, smooth, and sound; ready to receive HDPE sheet.
   4. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

A. Clean, prepare, and treat substrates according to manufacturer's written instructions. Provide clean, dust-free, and dry substrates for waterproofing application.

B. Mask off adjoining surfaces not receiving waterproofing to prevent spillage and overspray affecting other construction.

C. Remove grease, oil, bitumen, form-release agents, paints, curing compounds, and other penetrating contaminants or film-forming coatings from concrete.

D. Remove fins, ridges, mortar, and other projections and fill honeycomb, aggregate pockets, holes, and other voids.

E. Prepare, fill, prime, and treat joints and cracks in substrates. Remove dust and dirt from joints and cracks according to ASTM D 4258.
   1. Install sheet strips and center over treated construction and contraction joints and cracks exceeding a width of 1/16 inch (1.6 mm).
F. Bridge and cover all isolation joints and expansion joints; discontinuous deck-to-wall and deck-to-deck joints with overlapping sheet strips.
   1. Invert and loosely lay first sheet strip over center of joint. Firmly adhere second sheet strip to first and overlap to substrate.

G. All Corners: Prepare, prime, and treat inside and outside corners according to ASTM D 6135.
   1. Install membrane strips centered over vertical inside corners. Install 3/4-inch fillets of liquid membrane on horizontal inside corners and as follows:
      a. At footing-to-wall intersections, extend liquid membrane each direction from corner or install membrane strip centered over corner.
      b. At plaza deck-to-wall intersections, extend liquid membrane or sheet strips onto deck waterproofing and to finished height of sheet flashing.

H. Prepare, treat, and seal vertical and horizontal surfaces at terminations and penetrations through waterproofing and at drains and protrusions according to ASTM D 6135.

3.03 SELF ADHERING WATERPROOF MEMBRANE APPLICATION

A. Install self-adhering sheets according to waterproofing manufacturer’s written instructions and recommendations in ASTM D 6135.

B. Apply primer to substrates at required rate and allow to dry. Limit priming to areas that will be covered by sheet waterproofing in same day. Reprime areas exposed for more than 24 hours.

C. Apply and firmly adhere sheets over area to receive waterproofing. Accurately align sheets and maintain uniform 2-1/2-inch-(64-mm-) minimum lap widths and end laps. Overlap and seal seams and stagger end laps to ensure watertight installation.
   1. When ambient and substrate temperatures range between 25 and 40 deg F (minus 4 and plus 5 deg C), install self-adhering, rubberized-asphalt sheets produced for low-temperature application. Do not use low-temperature sheets if ambient or substrate temperatures are higher than 60 deg F (16 deg C).

D. Two-Ply Application: Install sheets to form a membrane with lap widths not less than 50 percent of sheet widths to provide a minimum of 2 thicknesses of sheet membrane over areas to receive waterproofing.

E. Horizontal Application: Apply sheets from low point to high point of decks to ensure that side laps shed water.

F. Apply continuous sheets over sheet strips bridging substrate cracks, construction, and contraction joints.

G. Seal exposed edges of sheets at terminations not concealed by metal counterflashings or ending in reglets with mastic or sealant.

H. Install sheet waterproofing and auxiliary materials to tie into adjacent waterproofing.

I. Repair tears, voids, and lapped seams in waterproofing not complying with requirements. Slit and flatten fishmouths and blisters. Patch with sheets extending 6 inches (150 mm) beyond repaired areas in all directions.

J. Correct deficiencies in or remove sheet waterproofing that does not comply with requirements, repair substrates, reapply waterproofing, and repair sheet flashings.

K. Membrane to be applied to:
   1. All column to sheathing joints
   2. All sheathing to slab joints

L. Membrane to be applied prior to fluid applied barriers.
3.04 PROTECTION COURSE INSTALLATION
   A. Install protection course with butted joints over waterproofing membrane before starting subsequent construction operations.

3.05 PROTECTION AND CLEANING
   A. Protect waterproofing from damage and wear during remainder of construction period.
   B. Protect installed from damage due to ultraviolet light, harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation will be subject to abuse and cannot be concealed and protected by permanent construction immediately after installation.
   C. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION
SECTION 07 1616

CRYSTALLINE WATERPROOFING

PART 1 GENERAL

1.1 SECTION INCLUDES
A. Crystalline waterproofing.
B. Preparation of surfaces to be waterproofed, including plugging active water leaks.

1.2 REFERENCE STANDARDS

1.3 SUBMITTALS
A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used, including: crystalline waterproofing.
   1. Test data showing hydraulic permeability.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods.
   5. Details for waterproofing at joints, intersections, and other special conditions.
C. Specimen warranty.

1.4 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacture of products of the type specified.
B. Installer Qualifications: Acceptable to manufacturer, with documented experience on at least 5 projects of similar nature within the last 5 years.

1.5 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Take necessary precautions to keep cementitious materials dry.

1.6 FIELD CONDITIONS
A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY
A. See Section 01 78 00 – Closeout Submittals, for additional warranty requirements.
B. Provide installer's warranty agreeing to correct leaking waterproofing for 2 years from the Date of Substantial Completion, unless leakage is caused by structural failure, movement of the structure, or other causes beyond the installer's control.

PART 2 PRODUCTS

2.1 MANUFACTURERS
A. Crystalline Waterproofing:
   1. Euclid Chemical Company; www.euclidchemical.com
5. Substitutions: See Section – 01 600 - Product Requirements.

2.2 APPLICATIONS

A. Waterproofing for building surfaces:
   1. Inside of elevator pits.

2.3 MATERIALS

A. Crystalline Waterproofing: Portland cement and chemical compound that when applied to the surface of concrete forms insoluble crystals in the capillary pores preventing the passage of liquids, while having no adverse effect on the normal properties of concrete.
   1. Hydraulic Permeability: No measurable leakage or water flow at 200 psi pressure when tested in accordance with COE CRD-C 48, using minimum 2 inch thick sample and 20 days duration.
   2. Toxicity: Non-toxic.

B. Patching Compound: Ready-mixed cementitious mortar recommended or approved by waterproofing manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions. Use sand blasting, water blasting, or acid etching as recommended.

C. Plug water leaks.


E. Obtain approval of manufacturer's field representative before beginning installation.

3.3 INSTALLATION

A. Install in strict accordance with manufacturer's instructions. Maintain environmental conditions required and recommended by manufacturer. Keep a copy of manufacturer's instructions on site.

B. Coordinate installation with installation of products that must penetrate waterproofed surfaces.

C. Prevent excessive drying of surface.
   1. Cure waterproofing for at least 3 days, or length of time required by manufacturer, with water spray and adequate air circulation.
   2. Do not use chemical curing agents unless explicitly approved by waterproofing manufacturer.

D. Do not backfill, fill water or liquid holding structures, or apply finish coatings until time period recommended by manufacturer has passed.
3.4 FIELD QUALITY CONTROL
   A. Flood test waterproofing application by filling water holding structures to capacity and allowing to stand for not less than 24 hours.
   B. If any leaks appear, notify Architect and drain.
      1. Repair leaks at no additional cost to Owner.
      2. Repeat flood test until all leakage is eliminated.

3.5 PROTECTION
   A. Protect from damage by weather. Do not cover with impermeable (plastic) sheeting unless air circulation is provided.
   B. Touch-up, repair or replace damaged waterproofing after Substantial Completion.

END OF SECTION
SECTION 07 2100
THERMAL INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Board insulation and integral vapor retarder at cavity wall construction and exterior wall behind masonry wall finish.
B. Batt insulation in exterior wall, ceiling, and roof construction.
C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 RELATED REQUIREMENTS
A. Section 05 4000 - Cold-Formed Metal Framing: Board insulation as wall sheathing.
B. Section 07 2129 - Spray Insulation: Spray-on, adhered fibrous insulation.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
D. Manufacturer's Installation Instructions: Include information on special environmental conditions required for installation and installation techniques.

1.05 FIELD CONDITIONS
A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.01 FOAM BOARD INSULATION MATERIALS
A. Extruded Polystyrene Board Insulation: Extruded polystyrene board; ASTM C578; with either natural skin or cut cell surfaces, and the following characteristics:
   1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. R-value: 1 inch of material at 72 degrees F: 5, minimum.
   4. Complies with fire resistance requirements shown on the drawings as part of an exterior non-load-bearing exterior wall assembly when tested in accordance with NFPA 285.
   6. Water Absorption, Maximum: 0.3 percent, by volume.
7. Manufacturers:

8. Substitutions: See Section 01 6000 - Product Requirements.

B. Basis of Design Product: Styrofoam CavityMate by Dow Chemical Co.
   a. Substitutions: See Section 01 6000 - Product Requirements.

2.02 BATT INSULATION MATERIALS
A. Glass Fiber Batt Insulation: Flexible preformed batt or blanket, complying with ASTM C665; friction fit.
   1. Flame Spread Index: 75 or less, when tested in accordance with ASTM E84.
   2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
   3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
   4. Thickness: As indicated on drawings.
   5. Facing: Unfaced.
   6. Manufacturers:
   7. Substitutions: See Section 01 6000 - Product Requirements.

2.03 ACCESSORIES
A. Tape: Polyethylene self-adhering type, mesh reinforced, 2 inch wide.
B. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
C. Adhesive: Type recommended by insulation manufacturer for application.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation and adhesive.
B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT EXTERIOR WALLS
A. Adhere a 6 inch wide strip of polyethylene sheet over expansion joints with double beads of adhesive each side of joint.
B. Install rigid insulation directly to steel studs or exterior grade sheathing at 16 inches on center with manufacturer recommended mechanical fasteners. Tape all joints with manufacturer's minimum 4 inch wide sealant tape; comply with ASTM E2357.
C. Install boards horizontally on walls.
   1. Install in running bond pattern.
   2. Butt edges and ends tightly to adjacent boards and to protrusions.
D. Extend boards over expansion joints, unbonded to wall on one side of joint.
E. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
F. Place 6 inch wide polyethylene sheet at perimeter of wall openings, from adhesive vapor retarder bed to window and door frames. Tape seal in place to ensure continuity of vapor retarder and air seal.
G. Tape insulation board joints.
3.03 BATT INSTALLATION
   A. Install insulation in accordance with manufacturer's instructions.
   B. Install in exterior wall spaces without gaps or voids. Do not compress insulation.
   C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
   D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.

3.04 PROTECTION
   A. Do not permit installed insulation to be damaged prior to its concealment.

   END OF SECTION
SECTION 07 2400
EXTERIOR INSULATION AND FINISH SYSTEMS

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Composite wall cladding of rigid insulation and reinforced finish coating ("Class PB").
   B. Drainage and water-resistant barriers behind insulation board.

1.02 RELATED REQUIREMENTS
   A. Section 07 6200 - Sheet Metal Flashing and Trim: Perimeter flashings.
   B. Section 09 2116 – Gypsum Board Assemblies: Sheathing on metal stud framing.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Shop Drawings: Indicate wall joint patterns, joint details, and molding profiles.
   C. Product Data: Provide data on system materials, product characteristics, performance criteria, and system limitations.
D. Selection Samples: Submit manufacturer's standard range of samples illustrating available coating colors and textures.

E. Verification Samples: Submit actual samples of selected coating on specified substrate, minimum 12 inches square, illustrating project colors and textures.

F. Manufacturer's Installation Instructions: Indicate preparation required, installation techniques, and jointing requirements.

1.05 QUALITY ASSURANCE

A. Maintain copy of specified installation standard and manufacturer's installation instructions at project site at all times during installation.

B. EIFS Manufacturer Qualifications: Provide all EIFS products other than insulation from the same manufacturer with qualifications as follows:
   1. Member in good standing of EIMA (EIFS Industry Members Association).
   2. Manufacturer of EIFS products for not less than 5 years.

C. Insulation Manufacturer Qualifications: Approved by manufacturer of EIFS and approved and labeled under third party quality program as required by applicable building code.

D. Installer Qualifications: Company specializing in EIFS work, with minimum three years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to project site in manufacturer's original, unopened containers with labels intact. Inspect materials and notify manufacturer of any discrepancies.

B. Storage: Store materials as directed by manufacturer's written instructions.
   1. Protect adhesives and finish materials from freezing, temperatures below 40 degrees F and temperatures in excess of 90 degrees F.
   2. Protect Portland cement based materials from moisture and humidity. Store under cover off the ground in a dry location.
   3. Protect insulation materials from exposure to sunlight.

1.07 FIELD CONDITIONS

A. Do not prepare materials or apply EIFS under conditions other than those described in the manufacturer's written instructions.

B. Do not prepare materials or apply EIFS during inclement weather unless areas of installation are protected. Protect installed EIFS areas from inclement weather until dry.

C. Do not install coatings or sealants when ambient temperature is below 40 degrees F.

D. Do not leave installed insulation board exposed to sunlight for extended periods of time.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide manufacturer's standard material warranty, covering a period of not less than 5 years.

C. Provide separate warranty from installer covering labor for repairs or replacement for a period of not less than 5 years.

PART 2 PRODUCTS

2.01 MANUFACTURERS

B. Basis of Design Manufacturer:
   2. Substitutions: See Section 01 6000 - Product Requirements.
2.02 EXTERIOR INSULATION AND FINISH SYSTEM

A. Exterior Insulation and Finish System: Drainage type; reinforced finish coating on insulation board with drainage grooves adhesive-applied to water-resistant coating over substrate; provide a complete system that has been tested to show compliance with the following characteristics; include all components of specified system and substrate(s) in tested samples.

B. Fire Characteristics:
   1. Flammability: Pass, when tested in accordance with NFPA 285.
   2. Ignitibility: No sustained flaming when tested in accordance with NFPA 268.
   3. Potential Heat of Foam Plastic Insulation Tested Independently of Assembly: No portion of the assembly having potential heat that exceeds that of the insulation sample tested for flammability (above), when tested in accordance with NFPA 259 with results expressed in Btu per square foot.

C. Adhesion of Water-Resistive Coating to Substrate: For each combination of coating and substrate, minimum flatwise tensile bond strength of 15 psi, when tested in accordance with ASTM C297/C297M.

D. Adhesion to Water-Resistive Coating: For each combination of insulation board and substrate, when tested in accordance with ASTM C297/C297M, maximum adhesive failure of 25 percent unless flatwise tensile bond strength exceeds 15 psi in all samples.

E. Water Penetration Resistance: No water penetration beyond the plane of the base coat/insulation board interface after 15 minutes, when tested in accordance with ASTM E331 at 6.24 psf differential pressure with tracer dye in the water spray; include in tested sample at least two vertical joints and one horizontal joint of same type to be used in construction; disassemble sample if necessary to determine extent of water penetration.

F. Drainage Efficiency: Average minimum efficiency of 90 percent, when tested in accordance with ASTM E2273 for 75 minutes.

G. Salt Spray Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 300 hours exposure in accordance with ASTM B117, using at least three samples matching intended assembly, at least 4 by 6 inches in size.

H. Freeze-Thaw Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 10 cycles, when tested in accordance with ICC-ES AC219 or AC235.

I. Weathering Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating when viewed under 5x magnification after 2000 hours of accelerated weathering conducted in accordance with ASTM G153 Cycle 1 or ASTM G155 Cycle 1, 5, or 9.

J. Water Degradation Resistance: No cracking, checking, crazing, erosion, blistering, peeling, delamination, or corrosion of finish coating after 14 days exposure, when tested in accordance with ASTM D2247.

K. Mildew Resistance: No growth supported on finish coating during 28 day exposure period, when tested in accordance with ASTM D3273.

L. Abrasion Resistance Of Finish: No cracking, checking or loss of film integrity when tested in accordance with ASTM D968 with 500 liters of sand.

M. Impact Resistance: No cracking or denting when tested in accordance with ASTM E695 with a 30 pound impact mass.

2.03 MATERIALS

A. Base Coat: Fiber-reinforced, acrylic or polymer-based product compatible with insulation board and reinforcing mesh.

B. Insulation Board: Molded expanded polystyrene (EPS) board insulation, ASTM C578, Type XI, with the following characteristics:
1. Grooved Board: Back side of board adjacent to sheathing grooved with vertical channels designed to allow moisture to drain; at drainage points provide board configuration that permits drainage to the exterior.
2. Thermal Resistance (R factor per 1 inch (25.4 mm)) at 75 degrees F: 3.60.
C. Water-Resistive Barrier Coating: Fluid-applied air and water barrier membrane; applied to sheathing
1. Furnished or approved by EIFS manufacturer.
D. Fluid-Applied Flashing: Flexible water based polymer material suitable for use with reinforcing mesh and, if used with water-resistant barrier sheet, certified compatible with sheet material.
E. Flashing Tape: Self-adhering rubberized asphalt tape with polyethylene backing or other material and surface conditioner furnished or approved by EIFS manufacturer.

2.04 ACCESSORY MATERIALS
A. Insulation Adhesive: Type required by EIFS manufacturer for project substrate.
B. Metal Flashings: As specified in Section 07 6200.
C. Trim: EIFS manufacturer's standard galvanized steel trim accessories, as required for a complete project and including starter track and drainage accessories.
D. Sealant Materials: Compatible with EIFS materials and as recommended by EIFS manufacturer.

PART 3 EXECUTION
3.01 GENERAL
A. Install in accordance with EIFS manufacturer's instructions and ASTM C1397.
B. Where different requirements appear in either document, comply with the most stringent.
C. Neither of these documents supercedes the provisions of the Contract Documents that define the contractual relationships between the parties or the scope of work.

3.02 EXAMINATION
A. Verify that substrate is sound and free of oil, dirt, other surface contaminants, efflorescence, loose materials, or protrusions that could interfere with EIFS installation and is of a type and construction that is acceptable to EIFS manufacturer. Do not begin work until substrate and adjacent materials are complete and thoroughly dry.
B. If paper-faced gypsum sheathing has been exposed to weather for more than 30 days, check for integrity of surface using method specified in ASTM C1397 Annex A2, at minimum of two locations or once every 5000 sq ft, whichever is greater; if any test fails, notify Architect and do not begin installation.
C. Verify that substrate surface is flat, with no deviation greater than 1/4 in when tested with a 10 ft straightedge.

3.03 INSTALLATION - WATER-RESISTIVE BARRIER
A. Apply barrier coating as recommended by coating manufacturer; prime substrate as required before application.
B. Seal all substrate transitions and intersections with other materials to form continuous water-resistive barrier on exterior of sheathing, using method recommended by manufacturer.
C. At door and window rough openings and other wall penetrations, seal water-resistive barrier and flexible flashings to rough opening before installation of metal flashings, sills, or frames, using method recommended by manufacturer.
D. At moving expansion joints, apply flexible flashing or flashing tape across and recessed into joint with U-loop forming continuous barrier but allowing movement.
E. Lap flexible flashing or flashing tape at least 2 inches on each side of joint or transition.
3.04 INSTALLATION - INSULATION
   A. Install in accordance with manufacturer’s instructions.
   B. Prior to installation of boards, install starter track and other trim level and plumb and securely
      fastened. Install only in full lengths, to minimize moisture intrusion; cut horizontal trim tight to
      vertical trim.
   C. Install back wrap reinforcing mesh at all openings and terminations that are not to be protected
      with trim.
   D. On wall surfaces, install boards horizontally.
   E. Place boards in a method to maximize tight joints. Stagger vertical joints and interlock at
      corners. Butt edges and ends tight to adjacent board and to protrusions. Achieve a continuous
      flush insulation surface, with no gaps in excess of 1/16 inch.
   F. Fill gaps greater than 1/16 inch with strips or shims cut from the same insulation material.
   G. Rasp irregularities off surface of installed insulation board.
   H. Adhesive Attachment: Use method required by manufacturer to achieve drainage efficiency
      specified; do not close up drainage channels when placing insulation board.

3.05 INSTALLATION - FINISH
   A. Base Coat: Apply in thickness as necessary to fully embed reinforcing mesh, wrinkle free,
      including back-wrap at all terminations of the EIFS. Install reinforcing fabric as recommended
      by EIFS manufacturer.
      1. Lap reinforcing mesh edges and ends a minimum of 2-1/2 inches.
      2. Allow base coat to dry a minimum of 24 hours before next coating application.
   B. As required by impact resistance requirements, install second layer of reinforcing mesh
      embedded in second coat of base coating, tightly butting ends and edges of mesh.
   C. Install expansion joints at floor lines as recommended by EIFS manufacturer.
   D. Apply finish coat after base coat has dried not less than 24 hours, embed finish aggregate, and
      finish to a uniform texture and color.
   E. Finish Coat Thickness: As recommended by manufacturer.
   F. Seal control and expansion joints within the field of exterior finish and insulation system, using
      procedures recommended by sealant and finish system manufacturers.

3.06 CLEANING
   A. Clean EIFS surfaces and work areas of foreign materials resulting from EIFS operations.

3.07 PROTECTION
   A. Protect completed work from damage and soiling by subsequent work.

END OF SECTION
SECTION 07 3200
CLAY ROOF TILE

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Clay roof tile, accessories and warranties.

1.02 DESIGN GUIDELINES
A. Pitched Roofs:
   1. Clay roof tile systems to match the blended terra cotta color and style on existing buildings on the Midwestern State University Campus.

1.03 RELATED DOCUMENTS
A. Section 07 6200 – Sheet Metal Flashing and Trim.

1.04 REFERENCE STANDARDS
A. Requirements, abbreviations and acronyms for reference standards are defined in Section 01095.
B. ASTM B134 – Brass Wire.
C. ASTM B159 – Phosphor Bronze Wire.
E. ASTM C270 – Mortar for Unit Masonry.
F. ASTM D226 – Asphalt-Saturated Organic Felt Used in Roofing and Waterproofing.
H. ASTM D4586 – Asphalt Roof Cement, Asbestos Free.

1.05 QUALITY ASSURANCE
A. The work of this section shall be performed by a company that specializes in the type of clay tile roofing work required for this project, with a minimum of 5 years of documented successful experience and shall be performed by skilled workmen thoroughly experienced in the work of this section.
B. Manufacturer shall specialize in manufacturing the type of clay tile roofing system specified in this section, with a minimum of 5 years of documented successful experience, and have the facilities capable of meeting all requirements of Contract Documents as a single-source responsibility and warranty.
   1. Provide secondary products only as recommended by manufacturer of products for use with tiles specified.

1.06 SUBMITTALS
A. Submit the following in accordance with Section 01 3000 – Administrative Requirements.
B. Product Data: Shall be clearly marked to indicate all technical information which specifies full compliance with requirements of this Section and Contract Documents, including manufacturers published installation recommendations.
C. Samples:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Quantity</th>
<th>Size</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1</td>
<td>5</td>
<td>Typical tile</td>
<td>Each tile and accessory tiles</td>
</tr>
<tr>
<td>S2</td>
<td>5</td>
<td>6” long</td>
<td>Each mortar color</td>
</tr>
</tbody>
</table>

D. Asbestos and PCB Certification: After completion of installation, but prior to Substantial Completion, Contractor shall certify in writing that products and materials installed, and processes used, do not contain asbestos or polychlorinated biphenyls (PCB).

1.07 DELIVERY, HANDLING, AND STORAGE

A. Comply with General Conditions and including the following:
   1. Protect all work of this Section against breakage, chipping, staining, and other damage.
   2. Should such damage occur prior to Midwestern State University acceptance of the Work it shall be replaced with new material under this section, with the completed work meeting the requirements of this section.
   3. All such replacement costs and expenses shall be borne by the contractor at no additional expense to Owner.

1.08 WARRANTY

A. Repair or replace specified materials or Work that has failed within the warranty period. Failures include but are not limited to the following:
   1. Failure to perform as protective roofing.
   2. Roof leaks which are detected during the Warranty Period.
   3. Broken or discolored roof tiles attributable to product manufacturing defects.

B. Contractor to provide Warranty Forms (at end of this Section), to Owner’s Project Representative upon substantial completion of the Project.

C. Warranty Periods
   1. General Contractor: 2 years

PART 2 - PRODUCTS

2.01 UNAUTHORIZED MATERIALS

A. Materials and products required for work of this section shall not contain asbestos, polychlorinated biphenyls (PCB) or other hazardous materials identified by the Owner.

2.02 ACCEPTABLE MANUFACTURERS

A. General: For the purpose of establishing the minimum functional, aesthetic and quality standards required for the work of this section, products of the following manufacture’s are specified:
   1. Ludowici, Inc/A CertainTeed Company/New Lexington, Ohio.

B. Substitutions: Must be approved by Midwestern State University’s Project Representative and be in accordance with provisions of Section 01 6000 – Product Requirements.

2.03 MATERIALS

A. Membrane Underlayment: 30 lb. Organic felt, complying with ASTM D226, Type II.

B. Mortar: ASTM C270, Type M, and shall be an approved premixed, high strength, water-resistant mortar mixed with a suitable pigment (high-fired, non-leading mineral colorant type) to produce a color matching the color of the approved clay tile roofing, to be used under hip, ridge and coping tile.
C. Treated Wood Support Battens, Blocking and Stringers: Refer to Section 06 10 00 - Rough Carpentry.
   1. Clay Eave Strips: included with clay tiles.


E. Metal Flashing:
   1. Copper, 16oz., width as required.
   2. 1” lip, copper nail 2” from lip, sealant on top of nail.

F. Roofing Tiles and Accessories: All roof tiles and accessory tiles shall interlock and provide a complete approved weather tight roof.
   2. Color. Weathered custom color to be, SO/428-04 (54%), SO/296-04/M8 (32%), SO/M10/M23 (14%).

G. Tile Fastening System:
   1. Nails for securing the felt shall have large flat heads and shall be hot-dipped galvanized.
   2. Nails for securing the tile shall be solid copper not smaller than 11 gauge, 5/6” head minimum.
   3. Nails shall be long enough to penetrate the wood nailers 1” when the tiles are in their final position.
   4. Tile wires for tile-tie system shall be brass-14 gauge, copper alloy No. 260, annealed, conforming to ASTM B134, ASTM B159 and ASTM B206.

H. Sealant: Sonneborn NP-1 in compliance with ASTM D1002.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection: Prior to installation of tile roofing work, carefully inspect the installed work of other trades and verify that all such work is complete to the point where tile roofing installation may properly be commenced.
   1. Full acceptance of supporting surfaces as satisfactory to receive work of this Section shall be evidenced by start of installation of tiles.
   2. Verify that clay tile roofing can be installed in complete accordance with tile manufacture’s current recommendations.
   3. Immediately notify the Architect of all such areas of defective construction revealed by inspections and work under this Section.
   4. Do not proceed with installation in any areas containing defective construction until all such defects have been fully resolved and corrected.

B. Contractor shall provide a letter of acceptance from the Clay Tile manufacturer and roofing subcontractor, stating that the substrate is acceptable. Provide letter to the University’s Project Representative.

3.02 INSTALLATION OF UNDERLAYMENT AND FLASHING

A. Secure base membrane to substrate and secure overlaps per manufacturers instructions.
   1. Lay with minimum 4” head lap and a 6” side lap using three plies of 30lb felt material.
   2. Membrane and felt shall extend over hips and ridges and the surfaces left unbroken, applying double membranes.
   3. Install flashing at valleys, projections and adjacent surfaces as recommended by manufacturer, applying double membranes.

3.03 TILE INSTALLATION

A. Provide wood stringers at hips and ridges of proper height.
B. All hip only (not ridge or coping) tile shall be set in cement mortar and fastened by non-corrosive nails.
   1. All tile in contact with cement mortar shall be immersed in water for at least 2 minutes before laying.
C. The pattern on roofs shall be laid full corner tile (1/3, 2/3, full) and no attempt shall be made to stretch the courses.
   1. The courses shall be accurately spaced so as to finish even and parallel at the top of all level terminations
   2. Valleys shall be open with copper flashing (with an opening of 6" minimum) and close tile gap edges with mortar.
   3. Tiles shall be laid in random pattern so that similar colors are not grouped together.
D. Secure every piece of tile by at least one nail or screw, and two nails or screws were practical.
   1. All nails or screws shall be covered in finished work.
E. Lay all tile with an end lap of at least 3" properly fitted together.
F. A limited amount of elastic cement may be used for leveling tile, for pointing around the edges of top fixtures and eave enclosures, and between the joints of hip and ridge rolls.
   1. Spaces between field tile and the hip stringers shall be filled with portland cement to make waterproof joint.
   2. Where tile joins stringer, install plastic cement.
G. Starter tiles shall be of required lengths. Where cutting is required against abutting work it shall be neatly done.
H. Tiles that verge along the hips shall be cut close against the hip board and a watertight joint made by cementing cut hip joint to the hip board.
I. Provide clay roof tiles as a completely weatherproof and waterproof system requiring no further maintenance.
J. All sequences of work shall be inspected by the Owner's and the manufacturer's representatives prior to being covered by subsequent work.
K. Roofing contractor shall not proceed with subsequent work until inspection and approval by Owner's and Manufacturer's representative.

3.04 CLEANING
A. Promptly upon completion of this portion of the work, legally remove from the Project site all tools, equipment and surplus materials of the Section, including tile-ends, and debris resulting from the clay tile roofing installation.

3.05 WARRANTIES
A. ROOFING UNDERLAYMENT'S CERTIFICATION
Re: Roof Replacement of Designated Areas at Midwestern State University

__________________________________________________________,Certifies
(Roofing Underlayering Manufacturer)
that;
__________________________________________________________, is currently approved by
(Roofing Contractor)
the roofing system manufacturer to install the specified roofing system for the referenced
has reviewed all Bidding Documents in their entirety and approved of them as written and drawn.

Roofing Underlayment Manufacturer will provide field inspection services by a full time employee of the manufacturer, no less than three times a week, during, and until all roof construction work is completed and accepted by the Owner.

Roofing Underlayment Manufacturer will provide the manufacturer’s guarantee as stipulated in the Contract Documents upon completion of the project.

By: ____________________________________________________________
    Name

________________________________________________________
    Signed

________________________________________________________
    Title

(Affix Corporate Seal)

Date: __________________________

B. CONTRACTOR’S WARRANTY

Project Warranty for ____________________________________________

Whereas ________________________________________________________, (Contractor),
Address ___________________________, Telephone (___) ______ - ______

has performed ____________________ (Work) on the following Project: ________________________________
Address: _______________________________________________________,

WHEREAS, the Contractor has agreed to Warrant said Work __________________

NOW, THEREFORE, the Contractor hereby Warrants said Work in accordance with the terms hereof, complying with the terms of the Contract with the Owner dated ________, that ____________________ WARRANTY PERIOD ________, STARTING _____,
TERMINATING ___________ IN WITNESS THEREOF, this instrument has been duly executed this _____ day of ______, 20__, for the Contractor ____________________
as its ______________________ (position).
Name of firm: __________________________________________
Address: __________________________________________

And has been countersigned in accordance with the terms and conditions, for the
C. CLAY TILE MANUFACTURER’S WARRANTY

Project Warranty for __________________________________________________________

Whereas ____________________________________________________________ (Manufacturer),
Address: ________________________________________________________________

Telephone (____) ______-______ has furnished/provided __________________________ (product) on the following Project: __________________________________________________________

Address: ________________________________________________________________

Constructed by __________________________________________________________
Address: ________________________________________________________________

For _______________________________ (Owner),
Address: ________________________________________________________________

WHEREAS, the Manufacturer, through the Contractor, has agreed to Warrant said product ________________________________________________________________

NOW, THEREFORE, the Manufacturer hereby Warrants said Product in accordance with
the terms hereof, complying with the terms of the Contract with the Owner dated ______, that ________________________ WARRANTY PERIOD ________, STARTING ________, TERMINATING ________, IN WITNESS THEREOF, this instrument has been duly executed this _____ day of _____, 20___, for the Manufacturer ______________________ as its ______________________ (position).

And has been countersigned in accordance with the terms and conditions, for the Contractor ______________________ as its ______________________ (position).

Signed: ________________________________________________________________

Date: ________________________________________________________________

END OF SECTION
SECTION 07 42 65

THERMAL, WATER AND AIR BARRIER WALL SYSTEM

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Thermal and air barrier wall system for exterior cold-formed metal wall assemblies.
   1. Provide exterior water resistive wall insulation and air barrier system.
   2. Provide interior spray polyurethane foam.

B. Related Sections:
   1. Section 05 40 00 Cold-Formed Metal Framing: Load-bearing, metal exterior wall framing assemblies.
   2. Section 09 21 16 Gypsum Board Assemblies: Interior gypsum board wall finish.

1.2 REFERENCES

A. Reference standards:
   1. ASTM International (ASTM):
      a. ASTM C203-[05a]: Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
      b. ASTM C209-[12]: Test Method for Cellulosic Fiber Insulating Board.
      e. ASTM C1289-[14a]: Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
      g. ASTM D1622-[14]: Test Method for Apparent Density of Rigid Cellular Plastics.
      h. ASTM D2126-[09]: Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
      i. ASTM D 2842 Standard Test for Determining Water Absorption of Rigid Cellular Plastics.
      m. ASTM E331-[00]: Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference
      n. ASTM E 2357-[05]: Test Method for Determining Air Leakage of Air Barrier Assemblies.
1.3 SYSTEM DESCRIPTION

A. Furnish and install an exterior wall system that effectively controls thermal, air and water performance and provides continuity of the building envelope enclosure. The system shall include the following:
   1. Insulated sheathing secured to the exterior of the metal wall framing assembly.
   2. Spray polyurethane foam applied to the interior wall cavity.
   3. Joint, penetration and gap sealing material for sealing component joints, penetrations through the wall system and gaps between the building envelope enclosure components and wall opening frames.

B. Performance Characteristics:
   1. Thermal performance:
      a. Exterior insulation: ASTM C518, Stabilized R-value of 6.5 per inch of thickness with a minimum six month exposure capability to outdoor elements and 15 year thermal warranty.
      b. Interior spray polyurethane foam: ASTM C518
         1) 140 degree F/90 day Aged R-Value (measured at 75 degree F Mean Temp.), for product with a minimum 30 degree F ambient and substrate application temperature is R6.1/inch
         2) 140 degree F/90 day Aged R-Value (measured at 75 degree F Mean Temp.), for product with a minimum 45 degree F ambient and substrate application temperature is R6.4/inch
         3) 140 degree F/90 day Aged R-Value (measured at 75 degree F Mean Temp.), for product with a minimum 60 degree F ambient and substrate application temperature is R6.1/inch.
      4) Core density: ASTM D1622, Minimum 2.0 pcf.
      5) Acceptable adhesion to substrate based on specific minimum application temperature.
   2. Air barrier performance: When tested in accordance with ASTM E2357, at a test pressure of not less than 6.24 psf, air infiltration shall not exceed 0.04 cfm per square foot (0.2 L/s*m²) of fixed wall area. Testing should be conducted at positive and negative sustained wind loading of 12.5 psf (600 Pa) for one-hour duration in
each direction, pressure cycling of the wall at 2000 cycles in both the positive and negative direction, ending with wind gust loading at 25psf.

3. Water penetration: When tested in accordance with ASTM E331, no uncontrolled water penetration shall occur at a minimum differential pressure of 6.24 psf for minimum test duration of 2hrs.

4. Mold resistance: Thermal wall and air barrier system components shall provide non-food source for fungal growth.

C. Code Compliance: Exterior wall system and component materials shall comply with the following requirements:
1. Exterior Insulation:
   a. Class 1 (<and/or= 25 Flame Spread Index and < 450 Smoke Developed Index) classified at Max. thickness per UL 723 criteria or ASTM E84 criteria.

2. Spray Polyurethane Foam:
   a. Class 1 (<and/or= 25 Flame Spread Index and < 450 Smoke Developed Index) classified at Max. thickness per UL 723 criteria or ASTM E84 criteria.
   b. Fire Performance Evaluation as a component of an NFPA 285 approved wall assembly per the requirements of the International Building Code

3. System complies with ASTM E2357-[05]: Test Method for determining Air Leakage of Air Barrier Assemblies


D. Fire Resistance:

2. Fire-stopping measures, per code, should be included at the floor line in the stud cavity when the wall assembly extends beyond the edge of the floor line.

3. The spray applied insulation must be separated from the interior of the building by an approved thermal barrier complying with IBC section 2603.4 as applicable.

E. All joints, penetrations and gaps of the thermal and air barrier wall system shall be made watertight and air-tight.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation instructions for each thermal wall and air barrier system component product required.

B. At bid submission, provide the following evidence to the Architect:
1. Thermal and Air Barrier Wall System Manufacturer Contractor Accreditation
   a. Acceptable Accreditation Methods:
      1) Dow Thermax Wall System CM Accreditation Program, or Equal.
C. Reports:
   1. Submit Test Reports, summarized by Manufacturer of material(s), verifying qualities of thermal and air barrier wall system components meet or exceed specified requirements.
      a. Include results of ASTM E2357 air barrier system testing and ASTM E331 water penetration tests.
      b. Include mill certificates indicating steel framing sheet complies with the specified requirements.
   2. Submit Field Inspection and Test Reports in accordance with Field Quality Control requirements

D. Samples: Submit following material samples.
   1. Insulation panel, 12" square.
   2. Insulation fasteners/washers and joint flashing material.

E. Submit Material Safety Data Sheets (MSDS) for thermal and air barrier wall system components.

F. Spray Foam Contractor MUST submit at the time of BID a written certification from the Thermal and Air Barrier Wall System manufacturer.

1.5 QUALITY ASSURANCE

A. Spray Polyurethane Foam Installation: Spray polyurethane foam installer shall be accredited by Thermal and Air Barrier Wall System manufacturer at the time of bid. The spray foam installer shall be the accredited individual that submitted certification at the time of bid.

B. Installer Qualifications:
   1. The air barrier Installer shall be, during the award period as well as for the duration of the installation, officially recognized as a Certified Installer by the Thermal and Air Barrier Wall System Manufacturer (Certified Installer). The Certified Installer shall carry liability insurance and bonding.
   2. Each worker who is installing air barriers must be a, or accompanied by a, Certified Installer.
   3. Each Certified Installer can supervise a maximum of five workers. The Certified Installer shall be thoroughly trained and experienced in the installation of air barriers of the types being applied. Certified Installers shall perform or directly supervise all air/vapor barrier work on the project.
   4. Certified Installers shall have their Thermal and Air Barrier Wall System Manufacturer Certification in their possession and available on the project site, for inspection upon request.

C. Pre-installation Meeting: Prior to commencement of application of spray polyurethane foam review and document methods and procedures related to installation, including the following:
   2. Review metal wall framing assemblies for potential interference and conflicts and coordinate layout and support provisions for interfacing work
3. Review insulated sheathing and spray polyurethane foam methods and procedures related to application, including manufacturer's installation guidelines, Thermal and Air Barrier Wall System Manufacturer's Certification Program.

4. Review construction schedule and confirm availability of products, applicator personnel, equipment and facilities.

5. Review governing regulatory requirements, and requirements for insurance and certificates as applicable.

6. Review field quality control procedures.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver Thermal and Air Barrier Wall System materials in Manufacturer's unopened containers or bundles, fully identified by name, brand, type and grade. Exercise care to avoid damage during unloading, storing and installation.

B. Store, protect and handle Thermal and Air Barrier Wall System materials in accordance with the Manufacturer's recommendations to prevent damage, contamination and deterioration. Keep materials free of dirt and other foreign matter.

1.7 PROJECT CONDITIONS

A. Environmental Requirements: Install Thermal and Air Barrier Wall System work only when weather conditions are in compliance with Manufacturer's specific environmental requirements and conditions will permit work to be performed in accordance with Manufacturer's recommendations and warranty requirements.

B. Spray polyurethane foam:
   1. Do not proceed with installation of spray polyurethane foam until sheathing substrate construction is complete and openings and penetrating items have been installed and sealed.
   2. Do not proceed with installation of spray polyurethane foam until substrate surface temperatures accepting the spray polyurethane are above the manufacturer's recommended minimum surface temperatures.
   3. Verify that substrate surfaces to receive spray polyurethane foam are free of frost, oil, grease, oxidation, dirt, loose paint, loose scale, or other deleterious material that would impair bond.
   4. Do not apply spray polyurethane after the 6 months expiry date printed on the label of each container.
   5. Ventilate area to receive spray polyurethane foam by introducing fresh air and exhausting air continuously during and 24 hour after application to maintain non-toxic, unpolluted, safe working conditions.
   6. Provide temporary enclosures to prevent spray and noxious vapors from contaminating air beyond application area.
   7. Protect workers as recommended by spray polyurethane foam manufacturer.
   8. Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.
   9. Dispose of waste foam daily in location designated by Architect and empty drums in accordance with foam manufacturer's instructions.
1.8 WARRANTY

A. Submit the following warranties:

B. Warranty Registration: The warranty requires registrations. Contractor to insure registrations are completed.
   1. Registration One: Prior to commencement of installation.
   2. Registration Two: Following completion of installation.

C. The Warranties submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and the laws of governing jurisdictions and is in addition to and runs concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS
2.1 MANUFACTURER

A. Drawings and specifications are based on manufacturer's literature from The Dow Chemical Company unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in the specifications and in conformance with provisions of Section 016300 – Product Requirements.

2.2 INSULATION

A. Exterior Insulation: Glass-fiber-reinforced enhanced polyisocyanurate foam core sheathing faced with nominal 4 mil embossed white or blue acrylic-coated aluminum on one side and 1.25 mil embossed aluminum on the other side, complying with ASTM C1289 and meeting the following physical properties:
   1. ASTM C1289 Type 1, Class 2
   3. Aged Thermal Resistance (ASTM C518, measured at Mean Temp of 75F): R-6.5 at 1 inch of thickness with 15 year thermal warranty.
   6. Water Vapor Permeance (ASTM E96): <0.3 perms.
   7. Maximum Use Temperature: 250 degrees F.

   1. Panel Size: 4'-0" wide x 8'-0" OR 12'-0" long, square edge, shiplap when thickness of 1.55" and greater.
   2. Thickness: As indicated on drawings and approved submittals.
C. Accessories:

1. Fasteners: Provide insulated sheathing manufacturer’s recommended polymer or other corrosion-protective coated steel screw fasteners for anchoring sheathing to metal wall framing. Fastener length and size based on wall sheathing thickness.
   a. Acceptable Products:
      (1). Rodenhouse, Inc. 2 inch diameter “Thermal-Grip” Cl prong washer with “Grip-Deck” ceramic-coated, self-drilling screw.
      (2). Use the Grip-Lok auto-feed fastening system for high speed application (recommended for wall assemblies up to 2 inches in thickness) Contact Rodenhouse Inc. for more information at 616-454-3100.

2. Insulation Flashing: Provide insulated sheathing manufacturer’s recommended flashing for sealing joints, seams and veneer tie penetrations through the insulation layer.
   a. Acceptable Product:
      (1) The Dow Chemical Company LIQUIDARMOR CM commercial liquid flashing and sealant.

3. Wall Opening Flashing: Provide insulated sheathing manufacturer’s recommended flashing sealing window and door wall openings.
   a. Acceptable Products:
      (1) The Dow Chemical Company LIQUIDARMOR CM commercial liquid flashing and sealant.
   b. When greater widths are required for through wall flashings butyl rubber adhesive is recommended.

   b. Acceptable Products: The Dow Chemical Company “Great Stuff™ Pro Window & Door” single-component polyurethane low-pressure foam sealant

5. Gap Air Infiltration Filler: Two Component, Quick Cure Polyurethane Foam:
   a. Acceptable Products: The Dow Chemical Company FROTH-PAK™ Foam Insulation two component, quick-cure polyurethane foam
      1) NFPA 286 Approval for Exposed use to the interior of the building without the need for a 15-min thermal barrier
      2) ASTM E-84 Class A

6. Flexible polyethylene foam gasketing strip to reduce air infiltration between a concrete foundation and sill plate.

2.3 SPRAY POLYURETHANE FOAM AIR BARRIER

A. Spray Polyurethane Foam: Two-component spray polyurethane cellular plastic foam, complying with the following methods and meeting the following physical properties:
   4. Smoke Developed (ASTM E84, Class A): 450 or less.
5. Compressive Strength minimum (ASTM D1621, 10% parallel to rise): 20 psi.
6. Closed Cell Content (ASTM D2856): minimum 90 percent.

B. Acceptable Products: The Dow Chemical company STYROFOAM Spray Polyurethane Foam CM2030, CM 2045, or CM2060. Formulation required will be dependent upon surface temperature of substrate. Refer to manufacturers recommendations

1. STYROFOAM Spray Polyurethane Foam CM2030:
   b. Maximum/Nominal 1.5 inch thickness: Thermal Resistance (ASTM C518): 140degreeF/90day Aged R-Value, measured at 75F mean Temp: R9.2

2. STYROFOAM Spray Polyurethane Foam CM2045:
   b. Maximum/Nominal 1.5 inch thickness: Thermal Resistance (ASTM C518): 140degreeF/90day Aged R-Value, measured at 75F mean Temp: R9.6

3. STYROFOAM Spray Polyurethane Foam CM2060:

4. Substitutions permitted under provisions of Section 01630 – Product Substitutions

PART 3- EXECUTION

3.1 EXAMINATION

A. Examine substrates and installation conditions for compliance with requirements for installation conditions affecting performance of the work.
   1. Verify that metal wall studs, opening framing, bridging, bracing and other framing support members and anchorage have been installed within thermal wall system alignment tolerances and requirements.
   2. Verify that substrate surfaces to receive spray polyurethane foam are free of frost, oil, grease, oxidation, dirt, loose paint, loose scale, or other deleterious material that would impair bond.
   3. Verify that items required to penetrate the thermal wall system are placed and penetration gaps and cracks are properly sealed before installation of spray polyurethane foam.
   4. Do not proceed with thermal and air barrier wall system installation until unsatisfactory conditions have been corrected.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.
3.2 INSULATION INSTALLATION

A. Install insulation in accordance with manufacturer's recommendations. Fasten to exterior face of exterior metal stud wall framing using sheathing manufacturer's recommended type and length screw fasteners with washers. Abut panels tightly together and around openings and penetrations.
   1. Install sheathing panels horizontally with blue aluminum facing to exterior. Use maximum lengths to minimize number of joints. Locate edge joints parallel to and on framing. Center end joints over supports and stagger in each course. Provide additional framing wherever panel joints do not bear against framing, plates or sill members.
   2. Fasten panels to each support with fasteners spaced 12 inches on center at perimeter and 16 inches on center in panel field. Set back perimeter fasteners 3/8" from edges and ends of panel units. Drive fasteners to bear tight and flush with surface of insulation. Do not countersink. Perimeter fasteners can be detailed to bridge the gap of abutting board joints due to the 1.75" or 2" diameter of the washer used to fasten the board to the studs. Maximum of two board joints may be bridged per fastener.
   3. Install flashing joint tape at end and edge joints in accordance with sheathing manufacturer's joint sealing recommendations.
   4. Install flashing tape behind wall tie and mechanical fastening assemblies for rain screen claddings.
   5. Seal sheathing joints and penetrations of sheathing in accordance with sheathing manufacturer's joint and penetration sealing recommendations.
   6. After base flashing, which may include a termination bar running horizontally along the top edge of the flashing, is installed on exterior of insulated sheathing, install with sheathing manufacturer's joint and penetration sealing to the exterior sheathing and lapped over the top edge of the base flashing.

3.3 SPRAY POLYURETHANE FOAM INSTALLATION

A. Preparation
   1. Mask and cover adjacent areas to protect from overspray.
   2. Apply primers for special conditions as recommended by manufacturer.
   3. Cover wide joints with transition sheet membrane as specified in Section 07 27 50
   4. Clean work area prior to application of sprayed insulation.
   5. Verify substrate temperature meets manufacturer's requirements for specific formulations used.
   6. Ensure that all stud cavity fire-stopping is installed prior to application of spray foam.

B. Application: Spray apply polyurethane foam in accordance with ASTM C1029 and manufacturer's installation guidelines; complying with preparation methods outlined in 3.3.A.
   1. Apply spray polyurethane foam by picture framing around the interior studs at the insulated sheathing – steel stud interface and one pass across all board joints and penetrations.
   2. Finish applying spray polyurethane foam with one pass not exceeding 1.5 inches in thickness. Two passes are acceptable to reach maximum thickness of 1.5 inch.
3. If more than one layer is being applied, allow the layer applied first to cool to the max. substrate temperature or less recommended for the STYROFOAM™ Spray Polyurethane Foam CM Series.
4. Avoid formation of sub-layer air pockets.
5. Apply spray polyurethane foam in overlapping layers, in a manner to obtain a smooth, uniform surface. Total thickness as indicated.
6. Maintain 3 inch clearance around chimneys, heating vents, steam pipes, recessed lighting fixtures and other heat sources.
7. Do not apply spray polyurethane foam to inside of exit openings or electrical junction boxes.
8. Maintain a continuous layer of spray foam from floor to floor to roof to complete air barrier.

C. Field Quality Control. Submit spray polyurethane foam field inspection and test reports for the following:
1. The Certified Installer shall complete the Daily Work Record and record all information required including the results of the testing. The Daily Work Record shall be kept on site for routine inspection. Copies of the Daily Work Record shall be forwarded to the manufacturer, owner or owner’s representative upon request.
2. The costs incurred for daily testing and inspection by the Certified Installer and the completion of the Daily Work Record shall be borne by the Accredited Contractor.
3. If required by the owner, arrange for site inspections by a qualified third party inspector. The frequency and cost of inspections shall be included in the bid at the owners request. If the site inspection reveals any defects, the Accredited Contractor shall immediately rectify all such defects at his cost.
4. The Certified Installer’s daily work record shall verify conformance with the Thermal and Air Barrier Wall System Manufacturer’s instructions, the standard ULC S705.2-02 Installation standard and this section of the project specification.
   a) Follow Manufacturer guidelines for proper temperature settings regarding spray equipment as stated on Manufacturer product information sheets.
   b) Follow Manufacturer guidelines for proper spray polyurethane foam formulation based on substrate and ambient temperatures product will be applied to.
   c) Test completed application daily for core density and cohesion/adhesion to substrate. Record results daily in test reports.
   d) After product has properly cured, conduct tests to verify adhesion between the spray polyurethane foam and the substrate.
   e) Conduct adhesion tests on all corners and building angles, at wall-to-slab junctions, and at wall-to-roof junctions.
   f) Perform one adhesion test for every wall less than 100 feet in length. Perform two tests for every wall greater than 100 feet and less than 200 feet in length, with an additional test conducted for every additional 100 fee, or part thereof, in wall length.
   g) Transition membranes shall be pull tested in accordance with the Certified Installer training program requirements before installing the spray polyurethane air barrier material.
3.4 CLEANING AND PROTECTION

A. Remove overspray from non-prescribed surfaces without causing damage to surfaces.

B. Remove protective covers from adjacent surfaces.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Wood-fiber cement panels.

1.02 RELATED REQUIREMENTS
   A. Section 09 9000 – Paints and Coatings: Field painting.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Manufacturer's data sheets on each product to be used, including:
      1. Manufacturer's requirements for related materials to be installed by others.
      2. Preparation instructions and recommendations.
      3. Storage and handling requirements and recommendations.
      4. Installation methods, including nail patterns.

1.05 QUALITY ASSURANCE
   A. Installer Qualifications: Company specializing in performing work of the type specified in this section with minimum 3 years of experience.

1.06 DELIVERY, STORAGE, AND HANDLING
   A. Store products under waterproof cover and elevated above grade, on a flat surface.

PART 2 PRODUCTS

2.01 SIDING
   A. Panel Siding: Panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
      1. Texture: Smooth.
      2. Length (Height): 96 inches, nominal.
      4. Thickness: As indicated on drawings.
      5. Finish: Factory applied primer.
      6. Warranty: 50 year limited; transferable.
      7. Panel Siding Manufacturers:
         d. Substitutions: See Section 01 6000 - Product Requirements.
   B. Vented Soffit Panels: Vented Panels made of cement and cellulose fiber formed under high pressure with integral surface texture, complying with ASTM C1186 Type A Grade II; with machined edges, for nail attachment.
      1. Texture: Smooth face, vented.
      2. Length: 96 inches, nominal.
      4. Thickness: As indicated on drawings.
      5. Finish: Factory applied primer.
      6. Manufacturer: Same as siding.
2.02 ACCESSORIES
   A. Trim: Same material and texture as siding.
   B. Fasteners: Galvanized or corrosion resistant; length as required to penetrate minimum 1-1/4 inch.
   C. Sealant: Elastomeric, polyurethane or silyl-terminated polyether/polyurethane, and capable of being painted.
   D. Finish Paint: Latex house paint acceptable to siding manufacturer; primer recommended by paint manufacturer, and as specified in Section 09 9000 - Paints and Coatings.

PART 3 EXECUTION
3.01 PREPARATION
   A. Examine substrate and clean and repair as required to eliminate conditions that would be detrimental to proper installation.
   B. Verify that water-resistive barrier has been installed over substrate completely and correctly.
   C. Do not begin until unacceptable conditions have been corrected.
   D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION
   A. Install in accordance with manufacturer's instructions and recommendations.
      1. Read warranty and comply with all terms necessary to maintain warranty coverage.
      2. Install in accordance with conditions stated in model code evaluation report applicable to location of project.
      3. Use trim details indicated on drawings.
      4. Touch up all field cut edges before installing.
      5. Pre-drill nail holes if necessary to prevent breakage.
   B. Over Steel Substrates: Use hot-dipped galvanized self-tapping screws, with the points of at least 3 screws penetrating each stud the panel crosses and at panel ends.
   C. Allow space for thermal movement between both ends of siding panels that butt against trim; seal joint between panel and trim with specified sealant.
   D. Do not install siding less than 6 inches from surface of ground nor closer than 1 inch to roofs, patios, porches, and other surfaces where water may collect.
   E. After installation, seal all joints except lap joints of lap siding. Seal around all penetrations. Paint all exposed cut edges.
   F. Finish Painting: Specified in Section 09 9000 Paints and Coatings.

3.03 PROTECTION
   A. Protect installed products until completion of project.
   B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
   A. Section Includes: Thermoplastic Polyolefin Single-Ply Roofing, Membrane and Board Insulation.

1.02 SUBMITTALS
   A. Product Data: Provide product data sheets for each type of product indicated in this section.
   B. Shop Drawings: Provide manufacturers standard details and approved shop drawings for the roof system specified.
   C. Certificates: Installer shall provide written documentation from the manufacturer of their authorization to install the roof system, and eligibility to obtain the warranty specified in this section.

1.03 QUALITY ASSURANCE
   A. Installer’s Qualifications: Installer shall be classified as a Master or Master Select™ contractor as defined and certified by GAF.
   B. Source Limitations: All components listed in this section shall be provided by a single manufacturer or approved by the primary roofing manufacturer.
   C. Final Inspection: Manufacturer’s representative shall provide a comprehensive final inspection after completion of the roof system. All application errors must be addressed and final punch list completed.

1.04 PERFORMANCE AND REGULATORY REQUIREMENTS
   A. Provide an installed roofing membrane and base flashing system that does not permit the passage of water, and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7. Provide all primary roofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.
   B. All work shall be performed in a safe, professional manner, conforming to all federal, state and local codes.

1.05 DELIVERY, STORAGE AND HANDLING
   A. Deliver all roofing materials to the site in original containers, with factory seals intact.
   B. Store all pail goods in their original undamaged containers as instructed by the manufacturer.

1.06 WARRANTY
   A. Provide Manufacturers standard EverGuard® Diamond Pledge™ Guarantee with single source coverage and no monetary limitation where the manufacturer agrees to repair or replace components in the roofing system, which cause a leak due to a failure in materials or workmanship.
      1. Duration: Fifteen years from the date of completion.
   B. Provide EverGuard® TPO Reflectivity Limited Warranty.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER
   A. GAF® - 1361 Alps Road, Wayne, NJ 07470
B. Substitutions: Permitted under provisions of Section 01 6000 – Product Requirements.

2.02 INSULATION

A. Tapered rigid polyisocyanurate board, with a strong white or black fibrous glass facer conforming to or exceeding the requirements of ASTM C 1289 / FS HH-I-1972. EnergyGuard™ Tapered Polyiso, with the following characteristics:
   1. Board Thickness: tapered ¼" per foot with 1/4" tapered crickets
   2. Thermal Resistance (LTTR value) of: varies

B. Rigid, high-density polyisocyanurate board, with a strong white or black fibrous glass facer conforming to or exceeding the requirements of ASTM C 1289 / FS HH-I-1972. EnergyGuard™ HD Polyiso, with the following characteristics:
   1. Board Thickness: As indicated on drawings
   2. Thermal Resistance (R value) as indicated on drawings.
   3. Compressive Strength: 80 psi.

2.03 ROOF BOARD AT PARAPET WALLS

A. Underlayment or overlayment. GP Dens-Deck® Roof Board (or approved equal), distributed by GAF®
   1. Board Thickness: ¼"
   2. Thermal Resistance (R value) of: .28

2.04 MEMBRANE MATERIALS

A. A smooth type, polyester scrim reinforced thermoplastic polyolefin membrane with a nominal 0.060 inch (60 mil) thickness, for use as a single ply roofing membrane.
   1. White color.
   2. Meeting or exceeding the minimum requirements of ASTM D-6878.
   3. UL Listed, FM Approved.
   4. White membrane; Energy Star Listed, CRRC Listed and Title 24 Compliant.
   5. EverGuard® TPO 60 mil thermoplastic single-ply roofing membrane by GAF.

2.05 FLASHING MATERIALS

A. Same as membrane materials.

2.06 ADHESIVES, SEALANTS and PRIMERS

A. Use sealants, adhesives and primers recommended by the manufacturer and compliant with specified warranty.

2.07 ACCESSORIES

A. Use roof installation accessories recommended by the manufacturer and compliant with specified warranty.

PART 3 - EXECUTION

3.01 INSTALLATION - GENERAL

A. Install TPO roofing system according to all current application requirements in addition to those listed in this section. Install in conformance with manufacturer warranty requirements.

3.02 INSULATION - GENERAL

A. Install roofing insulation system according to all current application requirements in addition to those listed in this section. Install in conformance with manufacturer warranty requirements.

3.03 FULLY ADHERED MEMBRANE APPLICATION

A. Membrane to be fully adhered according to all current application requirements in addition to those listed in this section. Adhere in conformance with manufacturer warranty requirements.
3.04 FLASHINGS
   A. General: Install flashings according to all current application requirements in addition to those listed in this section. Adhere in conformance with manufacturer warranty requirements.
   B. Refer to drawing details for flashing requirements that exceed the manufacturer requirements for warranty conformance.
   C. Parapet and Building Walls:
      1. Flash walls with EverGuard TPO membrane. Run membrane up the parapet and over the top before turning down the outside face of the wall. Terminate membrane 3/4” from the bottom of the aluminum parapet coping edge.

3.05 TRAFFIC PROTECTION
   A. Install walkway rolls at all roof access locations and other designated locations including roof-mounted equipment work locations and areas of repeated rooftop traffic.

3.06 ROOF PROTECTION
   A. Protect all partially and fully completed roofing work from other trades until completion.

3.07 CLEAN-UP
   A. All work areas are to be kept clean, clear and free of debris at all times.
   B. Clean and restore all damaged surfaces to their original condition.

END OF SECTION
SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including flashings, counterflashings, metal cornice, conductor heads, sheet metal roofing, and other items indicated in construction documents.

B. Reglets and accessories.

C. Precast concrete splash pads.

1.02 RELATED SECTIONS

A. Section 07 7123 – Manufactured Gutters and Downspouts.

B. Section 07 9005 - Joint Sealers.

C. Section 09 9000 - Paints and Coatings: Field painting.

1.03 REFERENCES


E. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2003.


N. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2003.
1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.05 QUALITY ASSURANCE
A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual requirements and standard details, except as otherwise indicated.
B. Maintain one copy of each document on site.
C. Fabricator and Installer Qualifications: Company specializing in sheet metal work with five years of documented experience.
D. General Contractor is responsible for coordination of all waterproofing and dampproofing products. General Contractor is to ensure that all waterproofing and/or dampproofing products are compatible and will not void manufacturer warranties.
E. General Contractor is to arrange for manufacturer inspection to generate field report documenting acceptable practices for this scope of work. Generated field report to be posted on web based file sharing system.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
B. Prevent contact with materials which may cause discoloration or staining.

PART 2 PRODUCTS
2.01 SHEET MATERIALS
A. Refer to drawings for locations of flashing types indicated in this Section.
B. Galvanized Steel: ASTM A 653/A 653M, with G90/Z275 zinc coating; minimum 0.02 inch thick base metal.
C. Pre-Finished Galvanized Steel: ASTM A 653/A 653M, with G90/Z275 zinc coating; minimum 0.02 inch thick base metal, shop pre-coated with PVDF coating.
   1. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as scheduled.
D. Aluminum: ASTM B 209 (ASTM B 209M); 0.032 inch thick; anodized finish of color as selected.
   1. Clear Anodized Finish: AAMA 611 AA-M12C22A41 Class I clear anodic coating not less than 0.7 mils thick.
E. Pre-Finished Aluminum: ASTM B 209 (ASTM B 209M); 0.032 inch thick; plain finish shop pre coated with fluoropolymer coating of color as selected.
   1. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as scheduled.
F. Stainless Steel: ASTM A 666 Type 304, soft temper, 0.015 inch thick; smooth No. 4 finish.
G. Copper: ASTM B370, cold rolled 16 oz/sq ft thick; natural finish.
H. Lead Coated Copper: ASTM B 101, 20 (6100) ounce-weight of bare copper, HOO (cold-rolled) temper.

2.02 ACCESSORIES
A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.
B. Underlayment: ASTM D 2178, glass fiber roofing felt.
C. Primer: Zinc chromate type.
D. Protective Backing Paint: Asphalitic mastic, ASTM D 4479 Type I.
E. Sealant: Type specified in Section 07900.
F. Plastic Cement: ASTM D 4586, Type I.
G. Solder: ASTM B 32; Sn50 (50/50) type.

2.03 FABRICATION
A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
B. Fabricate cleats of same material as sheet, interlocking with sheet.
C. Form pieces in longest possible lengths.
D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.
F. Tin edges of copper sheet to be soldered. Solder shop formed metal joints. After soldering, remove flux. Wipe and wash solder joints clean. Weather seal joints.
G. Fabricate corners from one piece with minimum 18 inch long legs; seam for rigidity, seal with sealant.
H. Fabricate vertical faces with bottom edge formed outward 1/4 inch (6 mm) and hemmed to form drip.
I. Fabricate flashings to allow toe to extend 2 inches over roofing. Return and brake edges.

2.04 GUTTER, DOWNSPOUT AND CONDUCTOR HEADS
A. Specifies in Section 07 7123 – Manufactured Gutters and Downspouts.

PART 3  EXECUTION

3.01 EXAMINATION
A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
B. Verify roofing termination and base flashings are in place, sealed, and secure.

3.02 PREPARATION
A. Install starter and edge strips, and cleats before starting installation.
B. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.
C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION
A. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.
B. Apply plastic cement compound between metal flashings and felt flashings.
C. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
D. Solder metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.

3.04 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for field inspection requirements.

B. Inspection will involve surveillance of work during installation to ascertain compliance with specified requirements.

END OF SECTION
SECTION 07 7100
ROOF SPECIALTIES

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Manufactured roof specialties, including copings and piping penetrations.
   B. Roof control and expansion joint covers.

1.02 RELATED REQUIREMENTS
   A. Section 07 7200 - Roof Accessories.

1.03 REFERENCE STANDARDS
   B. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors’ National Association; 2012.

1.04 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide data on shape of components, materials and finishes, anchor types and locations.
   C. Shop Drawings: Indicate configuration and dimension of components, adjacent construction, required clearances and tolerances, and other affected work.
   D. Samples: Submit two appropriately sized samples of coping, control joint cover, and expansion joint cover.
   E. Manufacturer’s Installation Instructions: Indicate special procedures, fasteners, supporting members, and perimeter conditions requiring special attention.

1.05 QUALITY ASSURANCE
   A. Perform work in accordance with SMACNA (ASMM) details.

PART 2 PRODUCTS
2.01 MANUFACTURERS
   A. Control and Expansion Joint Covers:
      4. Substitutions: See Section 01 6000 - Product Requirements.
   B. Pipe and Penetration Flashings:
      2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COMPONENTS
   A. Copings: Factory fabricated to sizes required; mitered, welded corners; concealed fasteners.
      1. Configuration: Concealed continuous hold down cleat at both legs; internal splice piece at joints of same material, thickness and finish as cap; concealed stainless steel fasteners.
      2. Pull-Off Resistance: Tested in accordance with ANSI/SPRI/FM 4435/ES-1 RE-3 to positive and negative design wind pressure as defined by applicable code.
      3. Material: Formed aluminum sheet, 0.050 inch thick, minimum.
      4. Finish: 70 percent polyvinylidene fluoride.
5. Color: Custom color selected by Architect.

B. Control and Expansion Joint Covers: Composite construction of flexible EPDM flashing of black color with closed cell urethane foam backing, each edge seamed to aluminum sheet metal flanges, designed for nominal joint width of 1 inch. Include special formed corners, tees, intersections, and wall flashings, each sealed watertight.

C. Pipe and Penetration Flashing: Base of rounded aluminum, compatible with sheet metal roof systems, and capable of accommodating pipes sized between 0.375 inches and 12 inches.
   1. Caps: EPDM.

2.03 ACCESSORIES
   A. Sealant for Joints in Linear Components: As recommended by component manufacturer.

2.04 FINISHES
   A. PVDF (Polyvinylidene Fluoride) Coating: Superior Performance Organic Finish, AAMA 2605; multiple coat, thermally cured fluoropolymer finish system; color as scheduled.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that deck, curbs, roof membrane, base flashings, and other items affecting work of this Section are in place and positioned correctly.

3.02 INSTALLATION
   A. Install components in accordance with manufacturer’s instructions.
   B. Seal joints within components when required by component manufacturer.
   C. Anchor components securely.
   D. Conform to SMACNA Architectural Sheet Metal Manual (ASMM) drawing details.
   E. Coordinate installation of components of this section with installation of roofing membrane and base flashings.
   F. Coordinate installation of sealants and roofing cement with work of this section to ensure watertightness.

END OF SECTION
SECTION 07 7123
MANUFACTURED GUTTERS AND DOWNSPOUTS

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Pre-finished aluminum gutters and downspouts.
   B. Precast concrete splash pads.

1.02 REFERENCE STANDARDS
   C. SMACNA (ASMM) - Architectural Sheet Metal Manual; Sheet Metal and Air Conditioning Contractors' National Association; 2012.

1.03 DESIGN REQUIREMENTS
   A. Conform to SMACNA (ASMM) for sizing components for rainfall intensity determined by a storm occurrence of 1 in 10 years.
   B. Conform to applicable code for size and method of rain water discharge.

1.04 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Shop Drawings: Indicate locations, configurations, jointing methods, fastening methods, locations, and installation details.
   C. Product Data: Provide data on prefabricated components.
   D. Samples: Submit two samples, 12 inch long illustrating component design, finish, color, and configuration.

1.05 DELIVERY, STORAGE, AND HANDLING
   A. Stack material to prevent twisting, bending, or abrasion, and to provide ventilation. Slope to drain.
   B. Prevent contact with materials that could cause discoloration, staining, or damage.

PART 2 PRODUCTS
2.01 MANUFACTURERS
   A. Gutters and Downspouts:
      5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS
   A. Pre-Finished Aluminum Sheet: ASTM B209 (ASTM B209M); 0.032 inch thick.
      1. Finish: Plain, shop pre-coated with PVDF (polyvinylidene fluoride) coating.
      2. Color: Custom color selected by Architect.
   B. Protective Backing Paint: Zinc molybdate alkyd.

2.03 COMPONENTS
   A. Gutters: SMACNA rectangular style profile.
   B. Downspouts: SMACNA Rectangular profile.
C. Anchors and Supports: Profiled to suit gutters and downspouts.
   1. Anchoring Devices: Type recommended by fabricator.
   2. Gutter Supports: Brackets.
   3. Downspout Supports: Brackets.
D. Fasteners: Same material and finish as gutters and downspouts, with soft neoprene washers.

2.04 ACCESSORIES
A. Splash Pads: Precast concrete type, size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.

2.05 FABRICATION
A. Form gutters and downspouts of profiles and size indicated.
B. Fabricate with required connection pieces.
C. Form sections square, true, and accurate in size, in maximum possible lengths, free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
D. Hem exposed edges of metal.
E. Fabricate gutter and downspout accessories; seal watertight.

2.06 FACTORY FINISHING
A. Fluoropolymer Coating: High Performance Organic Finish, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system; color as scheduled.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify that surfaces are ready to receive work.

3.02 PREPARATION
A. Paint concealed metal surfaces and surfaces in contact with dissimilar metals with protective backing paint to a minimum dry film thickness of 15 mil.

3.03 INSTALLATION
A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
B. Sheet Metal: Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts and accessories.
C. Slope gutters to facilitate complete removal of water in the presence of gravity alone.

END OF SECTION
SECTION 07 7200

ROOF ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Manufactured curbs, equipment rails, and pedestals.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.
   4. Maintenance requirements.
C. Shop Drawings: Submit detailed layout developed for this project. Show dimensioned location and number for each type of roof accessory.
D. Warranty Documentation:
   1. Submit manufacturer warranty.
   2. Ensure that forms have been completed in Owner's name and registered with manufacturer.
   3. Submit documentation that roof accessories accessories are acceptable to roofing manufacturer, and do not limit the roofing warranty.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store products under cover and elevated above grade.

1.05 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Correct defective Work within a five year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURED CURBS
A. Manufactured Curbs, Equipment Rails, and Other Roof Mounting Assemblies:
   4. Substitutions: See Section 01 6000 - Product Requirements.
B. Manufactured Curbs, Equipment Rails, and Other Roof Mounting Assemblies: Factory-assembled hollow sheet metal construction with fully mitered and welded corners, integral counterflashing, internal reinforcing, and top side and edges formed to shed water.
   1. Sheet Metal: Hot-dip zinc coated steel sheet complying with ASTM A653/A653M, SS Grade 33; G60 coating designation; 18 gage, 0.048 inch thick.
   2. Roofing Cants: Provide integral sheet metal roofing cants dimensioned to begin slope at top of roofing insulation; 1:1 slope; minimum cant height 4 inches.
3. Manufacture curb bottom and mounting flanges for installation directly on roof deck, not on insulation; match slope and configuration of roof deck.
4. Provide the layouts and configurations shown on the drawings.

C. Curbs Adjacent to Roof Openings: Provide curb on all sides of opening, with top of curb horizontal for equipment mounting.
   1. Provide preservative treated wood nailers along top of curb.
   2. Insulate inside curbs with 1-1/2 inch thick fiberglass insulation.
   3. Height Above Finished Roof Surface: 6 inches, minimum.
   4. Height Above Roof Deck: 14 inches, minimum.

D. Equipment Rails: Two-sided curbs in straight lengths, with top horizontal for equipment mounting.
   1. Provide preservative treated wood nailers along top of rails.
   2. Height Above Finished Roof Surface: 6 inches, minimum.
   3. Height Above Roof Deck: 14 inches, minimum.

E. Pipe, Duct, and Conduit Mounting Pedestals: Vertical posts, minimum 8 inches square unless otherwise indicated.
   1. Provide sliding channel welded along top edge with adjustable height steel bracket, manufactured to fit item supported.
   2. Height Above Finished Roof Surface: 6 inches, minimum.
   3. Height Above Roof Deck: 14 inches, minimum.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Do not begin installation until substrates have been properly prepared.
   B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION
   A. Clean surfaces thoroughly prior to installation.
   B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

3.04 PROTECTION
   A. Protect installed products until completion of project.
   B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 07 7233
ROOF HATCHES

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Factory-fabricated roof hatches for ladder access.
B. Factory fabricated safety rail system for hatches.

1.02 SUBMITTALS

A. Product Data: Submit manufacturer’s product data.
B. Shop Drawings: Submit shop drawings including profiles, accessories, location, adjacent construction interface, and dimensions.
C. Warranty: Submit executed copy of manufacturer’s standard warranty.

1.03 QUALITY ASSURANCE

A. Manufacturer: A minimum of 5 years experience manufacturing similar products.
B. Installer: A minimum of 2 years experience installing similar products.
C. Manufacturer’s Quality System: Registered to ISO 9001:2008 Quality Standards including in-house engineering for product design activities.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver products in manufacturer’s original packaging. Store materials in a dry, protected, well-vented area. Inspect product upon receipt and report damaged material immediately to delivering carrier and note such damage on the carrier’s freight bill of lading.

1.05 WARRANTY

A. Manufacturer’s Warranty: Provide manufacturer’s standard warranty. Materials shall be free of defects in material and workmanship for a period of five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Basis-of-Design Manufacturer: Type NB Roof Hatch by The Bilco Company: www.bilco.com.
B. Substitutions permitted under provisions of Section 01 6000 – Product Requirements.

2.02 ROOF HATCH

A. Furnish and install where indicated on plans metal roof hatch Type NB, size width: 30” x length: 54”. Length denotes hinge side. The roof hatch shall be single leaf. The roof hatch shall be pre-assembled from the manufacturer.
B. Performance characteristics:
   1. Cover shall be reinforced to support a minimum live load of 40 psf with a maximum deflection of 1/150th of the span or 20 psf wind uplift.
   2. Operation of the cover shall be smooth and easy with controlled operation throughout the entire arc of opening and closing.
   3. Operation of the cover shall not be affected by temperature.
   4. Entire hatch shall be weather tight with fully welded corner joints on cover and curb.
C. Cover: Shall be 14 gauge paint bond G-90 galvanized steel with a 3” beaded flange with formed reinforcing members. Cover shall have a heavy extruded EPDM rubber gasket that is bonded to the cover interior to assure a continuous seal when compressed to the top surface of the curb.

D. Cover insulation: Shall be fiberglass of 1” thickness, fully covered and protected by a metal liner of 22 gauge paint bond G-90 galvanized steel.

E. Curb: Shall be 12” in height and of 14 gauge paint bond G-90 galvanized steel. The curb shall be formed with a 3-1/2” flange with 7/16” holes provided for securing to the roof deck. The curb shall be equipped with an integral metal cap flashing of the same gauge and material as the curb, fully welded at the corners, that features the Bil-Clip® flashing system, including stamped tabs, 6” on center, to be bent inward to hold single ply roofing membrane securely in place.

F. Curb insulation: Shall be rigid, high-density fiberboard of 1” thickness on outside of curb.

G. Lifting mechanisms: Manufacturer shall provide compression spring operators enclosed in telescopic tubes to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and closing. The upper tube shall be the outer tube to prevent accumulation of moisture, grit, and debris inside the lower tube assembly. The lower tube shall interlock with a flanged support shoe through bolted to the curb assembly.

H. Hardware
1. Heavy pintle hinges shall be provided
2. Cover shall be equipped with a spring latch with interior and exterior turn handles
3. Roof hatch shall be equipped with interior and exterior padlock hasps.
4. The latch strike shall be a stamped component bolted to the curb assembly.
5. Cover shall automatically lock in the open position with a rigid hold open arm equipped with a 1” diameter red vinyl grip handle to permit easy release for closing.
6. Compression spring tubes shall be an anti-corrosive composite material and all other hardware shall be zinc plated and chromate sealed.
7. Cover hardware shall be bolted into heavy gauge channel reinforcing welded to the underside of the cover and concealed within the insulation space.

I. Finishes: Factory finish shall be alkyd based red oxide primed steel.

2.03 SAFETY RAIL

A. Furnish and install where indicated on plans safety hatch rail system Type RL-NB, sized to fit the roof hatch specified.
1. Substitutions permitted under provisions of Section 01 6000 – Product Requirements.

B. Performance characteristics:
1. Constructed of fiberglass reinforced polymer, UV and fire resistant.
2. Self closing gate.
3. Steel corner brackets.
4. Aluminum gate hinges.
5. Aluminum post hinges.
6. Stainless steel torsion rod.

PART - EXECUTION

3.01 EXAMINATION

A. Examine substrates and openings for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.
3.02 INSTALLATION

   A. Install products in strict accordance with manufacturer’s instructions and approved submittals. Locate units level, plumb, and in proper alignment with adjacent work.
      1. Test units for proper function and adjust until proper operation is achieved.
      2. Repair finishes damaged during installation.
      3. Restore finishes so no evidence remains of corrective work.

3.03 ADJUSTING AND CLEANING

   A. Clean exposed surfaces using methods acceptable to the manufacturer which will not damage finish.

END OF SECTION
SECTION 07 8400

FIRESTOPPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Firestopping materials.
B. Firestopping of all penetrations and interruptions to fire rated assemblies, whether indicated on drawings or not, and other openings indicated.

1.02 RELATED SECTIONS

A. Section 01 7000 - Execution Requirements: Cutting and patching.

1.03 REFERENCES


1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Schedule of Firestopping: List each type of penetration and proposed product.
C. Product Data: Provide data on product characteristics.
D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
F. Certificate from authority having jurisdiction indicating approval of materials used.

1.05 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs which provide the specified fire ratings required by local applicable code when tested in accordance with methods indicated.
1. Listing in the current classification or certification books of UL, FM, or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
2. Current evaluation reports published by CABO, ICBO, or BOCA will be considered as constituting an acceptable test report.
3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.
C. Installer Qualifications: Company specializing in performing the work of this section and:
1. With minimum five years documented experience installing work of this type.
2. Approved by firestopping manufacturer.
1.06 ENVIRONMENTAL REQUIREMENTS

A. Comply with firestopping manufacturer’s recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

B. Provide ventilation in areas where solvent-cured materials are being installed.

PART 2 PRODUCTS

2.01 FIRESTOPPING ASSEMBLIES

A. Firestopping: Use listed materials meeting requirements.
   1. Fire Ratings: Use any system listed by UL or tested in accordance with ASTM E 814 that has F Rating equal to fire rating of penetrated assembly and T Rating Equal to F Rating and that meets all other specified requirements.

2.02 MATERIALS

A. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

B. Foam Firestopping: Single component foam compound.
   1. Manufacturers:
      c. Substitutions: See Section 01 6000 - Product Requirements.

C. Fibered Compound Firestopping: Formulated compound mixed with incombustible non-asbestos fibers.
   1. Manufacturers:
      c. Substitutions: See Section 01 6000 - Product Requirements.

D. Fiber Packing Material: Mineral fiber packing insulation.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

E. Firestop Devices: Mechanical device with silicone elastomer filler and sheet stainless steel jacket, collar, and flanged stops.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

F. Intumescent Putty: Compound which expands on exposure to surface heat gain.
   1. Manufacturers:
d. Substitutions: See Section 01 6000 - Product Requirements.

G. Firestop Pillows: Formed mineral fiber pillows.
   1. Manufacturers:
      d. Substitutions: See Section 01 6000 - Product Requirements.

H. Primers, Sleeves, Forms, and Accessories: Type required for tested assembly design.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION
   A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.
   B. Remove incompatible materials which may affect bond.
   C. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION
   A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
   B. Do not cover installed firestopping until inspected by authority having jurisdiction.
   C. Install labeling required by code.

3.04 CLEANING AND PROTECTION
   A. Clean adjacent surfaces of firestopping materials.
   B. Protect adjacent surfaces from damage by material installation.

END OF SECTION
SECTION 07 9005

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sealants and joint backing.
B. Precompressed foam sealers.
C. Hollow gaskets.

1.02 REFERENCES


1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data indicating sealant chemical characteristics.
C. Manufacturer's Installation Instructions: Indicate special procedures.

1.04 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.
B. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
C. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years experience.
D. General Contractor is to arrange for manufacturer inspection to generate field report documenting acceptable practices for this scope of work. Generated field report to be posted on web based file sharing system.
E. Joint sealer to be applied to all dissimilar materials whether indicated on drawings or not. Colors must be submitted and approved as a mock up prior to commencement of Work.

1.05 MOCK-UP

A. Provide mock-up of sealant joints in conjunction with exterior masonry mock-ups.
B. Construct mock-up with specified sealant types and with other components noted.
C. Locate where directed.
D. Mock-up may not remain as part of the Work.
1.06 ENVIRONMENTAL REQUIREMENTS
   A. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07 COORDINATION
   A. Coordinate the work with all sections referencing this section.
   B. Mock-ups must be complete for review and approval. Only after complete mock-up has been approved may Work commence.

1.08 WARRANTY
   A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
   B. Correct defective work within a five year period after Date of Substantial Completion.
   C. Warranty: Include coverage for installed sealants and accessories which fail to achieve airtight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS
2.01 SEALANTS
   A. General Purpose Exterior Sealant: Polyurethane; ASTM C 920, Grade NS, Class 25, Uses M, G, and A; single component.
      2. Applications: Use for:
         a. Control, expansion, and soft joints in masonry.
         b. Joints between concrete and other materials.
         c. Joints between metal frames and other materials.
         d. Other exterior joints for which no other sealant is indicated.
   B. Exterior Expansion Joint Sealer: Precompressed foam sealer; urethane with water-repellent;
      2. Size as required to provide weathertight seal when installed.
      3. Applications: Use for:
         a. Exterior wall expansion joints.
   C. Exterior Metal Lap Joint Sealant: Butyl or polyisobutylene, nondrying, nonskinning, noncuring.
      1. Applications: Use for:
         a. Concealed sealant bead in sheet metal work.
         b. Concealed sealant bead in siding overlaps.
   D. General Purpose Interior Sealant: Acrylic emulsion latex; ASTM C 834, Type OP, Grade NF single component, paintable.
      2. Applications: Use for:
         a. Interior wall and ceiling control joints.
         b. Joints between door and window frames and wall surfaces.
         c. Other interior joints for which no other type of sealant is indicated.
   E. Bathtub/Tile Sealant: White silicone; ASTM C 920, Uses I, M and A; single component, mildew resistant. Color to be selected by Architect.
      1. Applications: Use for:
         a. Joints between plumbing fixtures and floor and wall surfaces.
         b. Joints between kitchen and bath countertops and wall surfaces.
F. Acoustical Sealant: Butyl or acrylic sealant; ASTM C 920, Grade NS, Class 12-1/2, Uses M and A; single component, solvent release curing, non-skimming.
   1. Applications: Use for concealed locations only:
      a. Sealant bead between top stud runner and structure and between bottom stud track and floor, when indicated on drawings.

   1. Approved by manufacturer for wide joints up to 1-1/2 inches.
   3. Applications: Use for:
      a. Expansion joints in floors.

   2. Applications: Use for:
      a. Joints in sidewalks and vehicular paving.

2.02 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D 1056, sponge or expanded rubber; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that substrate surfaces are ready to receive work.

B. Verify that joint backing and release tapes are compatible with sealant.

3.02 PREPARATION

A. Remove loose materials and foreign matter which might impair adhesion of sealant.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C 1193.

D. Protect elements surrounding the work of this section from damage or disfigurement.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C 1193.

C. Perform acoustical sealant application work in accordance with ASTM C 919.

D. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
   2. Neck dimension no greater than 1/3 of the joint width.
   3. Surface bond area on each side not less than 75 percent of joint width.
E. Install bond breaker where joint backing is not used.

F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

G. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

H. Tool joints concave.

I. Precompressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

J. Compression Gaskets: Avoid joints except at ends, corners, and intersections; seal all joints with adhesive; install with face 1/8 to 1/4 inch below adjoining surface.

3.04 CLEANING

A. Clean adjacent soiled surfaces.

3.05 PROTECTION OF FINISHED WORK

A. Protect sealants until cured.

END OF SECTION
SECTION 07 9513
EXPANSION JOINT COVER ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Expansion joint cover assemblies for wall and ceiling surfaces.

1.02 RELATED REQUIREMENTS
   A. Section 09 2116 - Gypsum Board Assemblies: Placement of expansion joint assemblies in gypsum board walls and ceilings.
   B. Section 09 5100 - Acoustical Ceilings: Expansion joint assemblies in suspended ceiling grids.

1.03 REFERENCE STANDARDS

1.04 ADMINISTRATIVE REQUIREMENTS
   A. Installation Templates: For frames and anchors to be embedded in concrete or masonry, furnish templates to relevant installers; include installation instructions and tolerances.

1.05 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide joint assembly profiles, profile dimensions, anchorage devices and available colors and finish.
   C. Shop Drawings: Indicate joint and splice locations, miters, layout of the work, effected adjacent construction and anchorage locations.
   D. Manufacturer's Installation Instructions: Indicate rough-in sizes and required tolerances for item placement.

1.06 REGULATORY REQUIREMENTS
   A. Fire rated joint covers shall have been tested by an independent, nationally recognized testing and listing entity in accordance with ANSI/UL No. 263, ASTM E119, UL 2079, or ASTM E1966, including hose stream test, where applicable, at the full rated period. Covers shall be listed with an independent, nationally recognized testing and listing entity. Fire rating shall be not less than the fire rating of adjacent construction.

1.07 QUALITY ASSURANCE
   A. Manufacturer: Obtain joint cover assemblies through one source from a single manufacturer.
      1. Manufacturer shall be ISO 9001 Certified.
   B. Installer: Firm with not less than three (3) years of successful experience in the installation of systems similar to those required by this project and acceptable to the manufacturer of the system.

1.08 DELIVERY, STORAGE AND HANDLING
   A. Provide temporary protective cover on anodized aluminum finished surfaces.
   B. Deliver joint covers to jobsite in new, clean, unopened crates of sufficient size and strength to protect materials during transit.
   C. Store components in original containers in a clean, dry location.
1.09 WARRANTY
   A. Submit manufacturer’s warranty that materials furnished will perform as specified for a period of
      not less than one (1) year when installed in accordance with manufacturer’s recommendations.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Expansion Joint Cover Assemblies:
   B. Other Acceptable Manufacturers:
      6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 EXPANSION JOINT COVER ASSEMBLY APPLICATIONS
   A. Interior Wall/Ceiling Joints Subject to Expansion Movement.
   B. Interior Wall/Wall Joints Subject to Expansion Movement.

2.03 EXPANSION JOINT COVER ASSEMBLIES
   A. Basis of Design Products:
      1. Wall to Ceiling: Number ACL-1, manufactured by Balco Inc.
      2. Wall to Wall: Number 75FWP-1 manufactured by Balco Inc.
      3. Substitutions: See Section 01 6000 - Product Requirements.
   A. Expansion Joint Cover Assemblies - General: Factory-fabricated and assembled; designed to
      completely fill joint openings, sealed to prevent passage of air, dust, water, smoke; suitable for
      traffic expected.
      1. Joint Dimensions and Configurations: As indicated on drawings.
      2. Joint Cover Sizes: Selected to suit joint width and configuration, based on manufacturer's
         published recommendations and limitations.
      3. Lengths: Provide covers in full lengths required; avoid splicing wherever possible.
   B. Resilient Seal Type Covers: Having flat exposed surface without crevices that could collect dirt;
      designed to withstand expected movement without extrusion of seal from joint assembly.
   C. Covers In Gypsum Board Assemblies: Provide style with anchoring wings that can be
      completely covered by joint compound.
   D. Covers In Fire Rated Assemblies: Provide cover assembly having fire rating equivalent to that
      of assembly into which it is installed.

2.04 MATERIALS
   A. Extruded Aluminum
      1. ASTM B221, alloy 6063-T5 for extrusions.
      2. ASTM B209, alloy 6061-T6 for plate.
   B. Resilient Seals:
   C. Anchors and Fasteners: As recommended by cover manufacturer.
   D. Threaded Fasteners: Aluminum.
E. Backing Paint for Aluminum Components in Contact with Cementitious Materials: Asphaltic type.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that joint preparation and dimensions are acceptable and in accordance with manufacturer's requirements.

B. Verify that frames and anchors installed by others are in correct locations and suitable for installation of remainder of assembly.

3.02 INSTALLATION

A. Install components and accessories in accordance with manufacturer's instructions.

B. Align work plumb and level, flush with adjacent surfaces.

C. Rigidly anchor to substrate to prevent misalignment.

3.03 PROTECTION

A. Do not permit traffic over unprotected floor joint surfaces.

B. Provide strippable coating to protect finish surface.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES

A. Non-fire-rated steel doors and frames.
B. Fire-rated steel doors and frames.
C. Thermally insulated steel doors.
D. Sound rated steel doors.
E. Accessories, including glazing.

1.02 RELATED SECTIONS

A. Section 08 7100 - Door Hardware.
B. Section 08 8000 – Glazing: Glass for doors and borrowed lites.

1.03 REFERENCES

D. Americans with Disabilities Act, Title III.
E. TEXAS ACCESSIBILITY STANDARDS (TAS) of the Architectural Barriers Act Article 9102, Texas Civil Statutes
G. ASTM E413 - Classification for Rating Sound Insulation; 2010.
H. ASTM E1332-90 - Standard Classification for Rating Outdoor-Indoor Sound Attenuation

P. UBC Std 7-2, Part II - Test Standard for Smoke- and Draft-control Assemblies; International Conference of Building Officials; current edition.


1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.

B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.

C. Label Compliance: Doors requiring fire labeling or sound transmission labeling, list fire and sound resistance ratings of doors provided.

D. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and identifying location of different finishes, if any. General Contractor is responsible for verifying wall thickness to ensure frame thickness is properly submitted and installed. This information and all coordination should be noted on submittals by the General Contractor prior to submission to Owner or Architect.

E. Installation Instructions: Manufacturer's published instructions, including any special installation instructions relating to this project.

F. Manufacturer's Certificate: Certification that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum five years documented experience.

B. Maintain at the project site a copy of all reference standards dealing with installation.

C. For all metal door and frames: Obtain field inspection from manufacturer to determine corrective measures for:
   1. Frame or door damage
   2. Frame or door scratches
   3. Frame or door stains
   4. Frame or door alignment

D. Manufacturer inspection report must be satisfied prior to requests to Owner or Architect for punch list inspection services.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Store in accordance with NAAMM HMMA 840.

B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Steel Doors and Frames:
   2. Curries: www.curries.com
   5. Substitutions: See Section 01 6000 – Products Options.
2.02 DOORS AND FRAMES
A. Requirements for All Doors and Frames:
   1. Accessibility: Comply with ANSI/ICC A117.1, Americans with Disabilities Act and Texas Accessibility Standards.
   2. Door Top Closures: Flush with top of faces and edges.
   3. Door Edge Profile: Beveled on both edges.
   5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings.
   6. Hardware Preparation: In accordance with DHI A115 Series, with reinforcement welded in place, in addition to other requirements specified in door grade standard.
   7. Finish: Factory primed, with factory pantone color finish.

2.03 STEEL FRAMES
A. General:
   1. Comply with the requirements of grade specified for corresponding door.
   2. Finish: Same as for door.

B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with all the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.

2.03 STEEL DOORS
A. Exterior Doors:
   1. Grade: NAAMM HMMA 861, physical performance Level A, 16 gage.
   2. Core: Polystyrene foam.

B. Exterior Doors, Sound-Rated:
   2. STC Rating of Assembled Door, Frame, and Seals: 41, calculated in accordance with ASTM E413, tested in accordance with ASTM E90 and ASTM E1332-90.
   3. Texture: Smooth faces.
   5. Sound Seals: Integral, concealed in door or frame.

C. Interior Doors, Non-Fire-Rated:
   2. Core: Vertical steel stiffeners.

D. Interior Doors, Fire-Rated:
   1. Grade: NAAMM HMMA 861, physical performance Level A.
   2. Fire Rating: As indicated on Door and Frame Schedule, with temperature rise ratings as required by code, tested in accordance with NFPA 252.
      a. Provide units listed and labeled by UL.
      b. Attach fire rating label to each fire rated unit.
   3. Smoke and Draft Control Doors: In addition to required fire rating, comply with air leakage requirements of UBC Std 7-2, Part II; with "S" label; if necessary, provide additional gasketing or edge sealing.
2.04 STEEL FRAMES

A. General:
1. Comply with the requirements of grade specified for corresponding door.
2. Finish: Same as for door; Factory primed, with factory pantone color finish.
3. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
4. Frames in Masonry Walls: Size to suit masonry coursing as indicated on drawings.
5. Frames Wider than 48 Inches: Reinforce with steel channel fitted tightly into frame head, flush with top.

B. Exterior Door Frames: Face welded, seamless with joints filled.
   1. Galvanizing: All components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A 653/A 653M, with manufacturer's standard coating thickness.
   2. Weatherstripping: Specified in Section 08 7100.

C. Interior Door Frames, Non-Fire-Rated: Fully welded type.
   1. Terminated Stops: Provide at all interior doors; closed end stop terminated at floor line at 90 degree angle.

D. Interior Door Frames, Fire-Rated: Fully welded type.
   1. Fire Rating: Same as door, labeled.

E. Interior Door Frames - Sound-Rated: Fully welded type.
   1. Finish: Factory primed, for field finishing.

F. Frames for Interior Glazing or Borrowed Lights: Construction and face dimensions to match door frames, and as indicated on drawings.

2.05 ACCESSORY MATERIALS

A. Glazing: As specified in Section 08 8000, factory installed.

B. Grout for Frames: Portland cement grout of maximum 4-inch slump for hand troweling; thinner pumpable grout is prohibited.

C. Silencers: Resilient rubber, fitted into drilled hole; 3 on strike side of single door, 3 on center mullion of pairs, and 2 on head of pairs without center mullions.

D. Temporary Frame Spreaders: Provide for all factory- or shop-assembled frames.

2.06 FINISH MATERIALS

A. Primer: Rust-inhibiting, complying with ANSI A250.10, door manufacturer's standard.

B. All metal doors and frames are to receive shop primer per manufacturer’s standard.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that opening sizes and tolerances are acceptable.

3.02 PREPARATION

A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.
3.03 INSTALLATION
   A. Install in accordance with the requirements of the specified door grade standard and NAAMM HMMA 840.
   B. In addition, install fire rated units in accordance with NFPA 80.
   C. Coordinate frame anchor placement with wall construction. Provide minimum 3 anchors per jamb.
   D. Grout frames in masonry and concrete construction, using hand trowel methods; brace frames so that pressure of grout before setting will not deform frames.
   E. Coordinate installation of hardware.
   F. Coordinate installation of glazing.

3.04 ERECTION TOLERANCES
   A. Clearances between door and frame: As specified in ANSI A250.8.
   B. Maximum Diagonal Distortion: 1/16 in measured with straight edge, corner to corner.

3.05 ADJUSTING
   A. Adjust for smooth and balanced door movement.

3.06 SCHEDULE
   A. Refer to Door and Frame Schedule on the drawings.

END OF SECTION
SECTION 08 1416

FLUSH WOOD DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Flush wood doors; flush configuration; fire rated, non-rated.

1.02 RELATED REQUIREMENTS

A. Section 08 1113 - Steel Doors and Frames.
B. Section 08 7100 - Door Hardware.
C. Section 08 8000 - Glazing.

1.03 REFERENCE STANDARDS

A. ASTM E413 - Classification for Rating Sound Insulation; current edition.
H. The Forest Stewardship Council; www.fscus.org

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements for submittal procedures.
B. Product Data: Indicate door core materials and construction; veneer species, type and characteristics.
C. Shop Drawings: Show doors and frames, elevations, sizes, types, swings, undercuts, beveling, blocking for hardware, factory machining, factory finishing, cutouts for glazing and other details.
   1. Provide the information required by AWI/AWMAC/WI Architectural Woodwork Standards.
   2. Include certification program label.
D. Specimen warranty.
E. Test Reports: Show compliance with specified requirements for the following:
   1. Sound-retardant doors and frames; sealed panel tests are not acceptable.
F. Samples: Submit three samples of door construction, 12 x 12 inch in size cut from top corner of door.

G. Samples: Submit three samples of door veneer, 24 x 24 inch in size illustrating wood grain, stain color, and sheen.

H. Certifications: Provide wood products containing certification and label of the Forest Stewardship Council.

I. Manufacturer's Installation Instructions: Indicate special installation instructions.

J. Warranty, executed in Owner's name.

1.05 QUALITY ASSURANCE

A. Maintain one copy of the specified door quality standard on site for review during installation and finishing.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

1. Company with at least one project in the past 5 years with value of woodwork within 20 percent of cost of woodwork for this Project.

C. Installed Fire Rated Door and Transom Panel Assembly: Conform to NFPA 80 for fire rated class as indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Package, deliver and store doors in accordance with specified quality standard.

B. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Protect doors with resilient packaging sealed with heat shrunk plastic. Do not store in damp or wet areas; or in areas where sunlight might bleach veneer. Seal top and bottom edges with tinted sealer if stored more than one week. Break seal on site to permit ventilation.

1.07 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Interior Doors: Provide manufacturer's warranty for the life of the installation.

C. Include coverage for delamination of veneer, warping beyond specified installation tolerances, defective materials, and telegraphing core construction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Wood Veneer Faced Doors:

2. Graham Wood Doors: www.grahamdoors.com
4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS AND PANELS

A. All Doors: See drawings for locations and additional requirements.

1. Quality Level: Custom Grade, in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.

2. Wood Veneer Faced Doors: 5-ply unless otherwise indicated.

B. Interior Doors: 1-3/4 inches thick unless otherwise indicated; flush construction.
1. Provide solid core doors at all locations.
2. Fire Rated Doors: Tested to ratings indicated on drawings in accordance with NFPA 252, UL 10B, or UBC Standard 7-2-94 ("neutral pressure"); UL or WH (ITS) labeled without any visible seals when door is open.
3. Smoke and Draft Control Doors: In addition to required fire rating, provide door assemblies tested in accordance with UL 1784 with maximum air leakage of 3.0 cfm per sq ft of door opening at 0.10 inch w.g. pressure at both ambient and elevated temperatures; with "S" label; if necessary, provide additional gasketing or edge sealing.
4. Smoke and Draft Control Doors: In addition to required fire rating, provide door assemblies tested in accordance with UBC Standard 7-2, Part II; provide additional gasketing or edge sealing.
5. Sound Retardant Doors: Minimum STC of 39 (for required fire rated doors), Minimum STC of 46 (for non-rated doors), calculated in accordance with ASTM E413, tested in accordance with ASTM E1408.
6. Wood veneer facing with factory transparent finish.

2.03 DOOR AND PANEL CORES
A. Non-Rated Solid Core and 20 Minute Rated Doors: Type particleboard core (PC), plies and faces as indicated above.
B. Fire Rated Doors: Mineral core, Type FD, plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.
C. Sound Retardant Doors: Equivalent to Type PC construction with core as required to achieve rating specified; plies and faces as indicated above.
D. All doors to contain minimum 85% recycled content.

2.04 DOOR FACINGS
A. Wood Veneer Facing for Transparent Finish: White Oak, veneer grade as specified by quality standard, rift sawn, book veneer match, running assembly match; unless otherwise indicated.
1. Vertical Edges: Same species as face veneer.
2. Pairs: Pair match each pair; set match pairs within 10 feet of each other when doors are closed.

2.05 ACCESSORIES
A. Glazing Stops: Aluminum channel shape, mitered corners; prepared for countersink style tamper proof screws.
B. Astragals for Non-Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge.
C. Astragals for Fire Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge, specifically for double doors.
D. Fill, sand and match finish of all nail holes.

2.06 DOOR CONSTRUCTION
A. Fabricate doors in accordance with door quality standard specified.
B. Cores Constructed with stiles and rails:
1. Provide solid blocks at lock edge for hardware reinforcement.
2. Provide solid blocking for other throughbolted hardware.
C. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
D. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
E. Provide edge clearances in accordance with the quality standard specified.

2.07 FIELD FINISHING - WOOD VENEER DOORS
   A. Finish work in accordance with Section 09 9000 – Paints and Coatings and as follows:
      1. Transparent:
         a. Stain: As selected by Architect.
         b. Sheen: As selected by Architect.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify existing conditions before starting work.
   B. Verify that opening sizes and tolerances are acceptable.
   C. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.02 INSTALLATION
   A. Install doors in accordance with manufacturer's instructions and specified quality standard.
      1. Install fire-rated doors in accordance with NFPA 80 requirements.
   B. Use machine tools to cut or drill for hardware.
   C. Coordinate installation of doors with installation of frames and hardware.
   D. Coordinate installation of glazing.

3.03 TOLERANCES
   A. Conform to specified quality standard for fit and clearance tolerances.
   B. Conform to specified quality standard for telegraphing, warp, and squareness.

3.04 ADJUSTING
   A. Adjust doors for smooth and balanced door movement.
   B. Adjust closers for full closure.

3.05 SCHEDULE - See Drawings

END OF SECTION
SECTION 08 3100
ACCESS DOORS AND PANELS

PART 1 GENERAL
1.01 SECTION INCLUDES
A. Wall access door and frame units.
B. Ceiling access door and frame units.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.
C. Shop Drawings: Indicate exact position of all access door units.
D. Manufacturer's Installation Instructions: Indicate installation requirements.
E. Project Record Documents: Record actual locations of all access units.

PART 2 PRODUCTS
2.01 ACCESS DOOR AND PANEL APPLICATIONS
A. Walls, Unless Otherwise Indicated:
   1. Material: Stainless steel, Type 304.
   2. Size: 12 x 12 inches, unless otherwise indicated.
   3. Tool-operated spring or cam lock; no handle.
   4. In All Wall Types: Surface mounted face frame and door surface flush with frame surface.
   5. In Gypsum Board: Drywall bead frame with door surface flush with wall surface.
   7. In Masonry: Surface mounted frame with door surface flush with frame surface.
B. Fire Rated Walls: See drawings for wall fire ratings.
   1. Material: Stainless steel, Type 304.
   2. Size: 12 x 12 inches, unless otherwise indicated.
   3. Insulated, double skin door panel.
   4. Tool-operated spring or cam lock; no handle.
C. Ceilings, Unless Otherwise Indicated: Same type as for walls.
   1. Material: Stainless steel, Type 304.
   2. Size in Lay-in Grid Ceilings: To match grid module.
   3. Size in Other Ceilings: 12 x 12 inches, unless otherwise indicated.
   4. Tool-operated spring or cam lock; no handle.
D. Fire Rated Ceilings: See drawings for ceiling fire ratings.
   1. Material: Stainless steel, Type 304.
   2. Size: 12 x 12 inches, unless otherwise indicated.
   3. Tool-operated spring or cam lock; no handle.

2.02 WALL AND CEILING UNITS
A. Manufacturers:
5. Substitutions: Section 01 6000 – Product Requirements.

B. Access Doors: Factory fabricated door and frame units, fully assembled units with corner joints welded, filled, and ground flush; square and without rack or warp; coordinate requirements with assemblies units are to be installed in.
   1. Style: Exposed frame with door surface flush with frame surface.
      a. In Gypsum Board: Use drywall bead type frame.
   2. Door Style: Single thickness with rolled or turned in edges.
   3. Frames: 16 gage, 0.0598 inch, minimum.
   4. Double-Skinned Hollow Steel Door Panels: 16 gage, 0.059 inch, minimum, on both sides and all edges.
   5. Units in Fire Rated Assemblies: Fire rating as required by applicable code for the fire rated assembly in which they are to be installed.
      a. Provide products listed and labeled by UL or ITS (Warnock Hersey) as suitable for the purpose specified and indicated.
   6. Stainless Steel Finish: No. 4 brushed finish.
   7. Hardware:
      a. Hardware for Fire Rated Units: As required for listing.
      b. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
      c. Latch/Lock: Tamperproof tool-operated cam latch.
      d. Gasketing: Extruded neoprene, around the perimeter of the door panel.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that rough openings are correctly sized and located.

3.02 INSTALLATION
   A. Install units in accordance with manufacturer's instructions.
   B. Install frames plumb and level in openings. Secure rigidly in place.
   C. Position units to provide convenient access to the concealed work requiring access.

END OF SECTION
SECTION 08 3213
SLIDING ALUMINUM-FRAMED GLASS DOORS

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Furnish all necessary materials, labor and equipment for the complete installation of interior sliding aluminum framed glass doors as shown on the drawings and specified herein.

1.02 RELATED SECTIONS
A. Section 05 5000 – Metal Fabrications: Miscellaneous structural supports.
B. Section 07 9005 – Joint Sealers: Perimeter sealants.
C. Section 08 8000 – Glazing: Glass for doors.

1.03 QUALITY ASSURANCE
A. Manufacturer: Company specializing in manufacturing the types of products specified in this section, and with minimum five years of documented experience.
B. Installer: Company specializing in performing the work of this section with minimum five years of experience.

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on standard framing members; describe materials and finish, product criteria, limitations.
C. Shop Drawings: Indicate component details, including widths and gages of frames. Indicate framed openings requirements and type and location of fasteners, and accessories or items required of related work.
   1. Indicate location of doors and door sliding direction.
D. Manufacturer's Installation Instructions: Indicate special procedures, conditions requiring special attention.

1.05 PROJECT CONDITIONS
A. Verify that field measurements are as indicated on the drawings.

PART 2 - PRODUCTS

2.01 MANUFACTURER
A. Drawings and specifications are based on manufacturer's literature from Kawneer Company Inc. unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01600 – Product Requirements.

2.02 ACCEPTABLE MANUFACTURERS
A. Interior sliding aluminum framed glass doors:
   5. Tubelite: www.tubeliteinc.com
   6. United States Aluminum: www.usalum.com
7. Substitutions: See Section 01 6000 - Product Requirements.

2.03 BASIS OF DESIGN PRODUCT
A. 1010 Sliding Mall Front, manufactured by Kawneer Company Inc.
B. Substitutions: See Section 01 6000 - Product Requirements.

2.04 MATERIALS
A. Extrusions shall be 6063.T5 alloy and temper (ASTM B 221 alloy G.S. 10A-T5).
B. Fasteners, where exposed, shall be aluminum, stainless steel or plated steel.
C. Perimeter anchors shall be aluminum or steel, providing the steel is properly isolated from the aluminum.
D. Glazing gaskets shall be vinyl extrusions.
E. Track inserts to be 22 gauge, roll formed stainless steel.
F. All exposed surfaces shall be free of scratches and other serious blemishes and shall receive: Architectural Class I Clear Anodic Coating conforming with Aluminum Association Standard AA-M12C22A41.
   1. Kawneer #14 Clear.

2.05 HARDWARE
A. Hardware for the 1010 Sliding Mall Front shall be the entrance manufacturers standard as follows:
   1. Tandem ballbearing caster
   2. Adams Rite MS 1850-A-505 hookbolt lock
   3. Cylinders, keyed to building master keying system.
   4. Flush face pull

2.06 FABRICATION
A. Fixed and sliding panels shall have a nominal depth of 1½” each to insure rigidity and prevent racking. The weight of each panel shall be supported by the base tracks. Sliding panels shall be equipped with two center pivoted spring loaded, tandem wheel assemblies, each capable of supporting a moving weight of 275 pounds and shall be equipped with two self-contained, steel ball bearing rollers. Sliding panels shall not be removable when in a locked position.

PART 3 - EXECUTION

3.01 INSTALLATION
A. All jambs, head and sill track shall be set in correct locations as shown in the details and shall be level, square, plumb and in alignment with other work in accordance with the manufacturer’s installation instructions and approved shop drawings.

3.02 PROTECTION
A. After installation, adequately protect exposed portions of aluminum surfaces from damage by grinding and polishing compounds, plaster, lime, acid, cement, or other contaminants.

3.03 CLEANING
A. Clean frames and glass at point substantial completion.

END OF SECTION
SECTION 08 3473
SOUND CONTROL DOOR ASSEMBLIES

PART 1 - GENERAL

1.01 SECTION INCLUDES
   A. Steel acoustical door assemblies.

1.02 RELATED SECTIONS
   A. Section 08 7100 - Door Hardware.
   B. Section 09 9000 - Paints and Coatings.

1.03 REFERENCES
   B. ASTM A 569 - Standard Specification for Steel, Carbon, (0.15 Maximum Percent), Hot-Rolled Sheet and Strip, Commercial Quality.
   C. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process
   G. ASTM E 413 - Classification for Determination of Sound Transmission Class.
   H. HMMA 840 - Installation and Storage of Hollow Metal Doors and Frames; Hollow Metal Manufacturers Association.

1.04 SYSTEM DESCRIPTION
   A. Design requirements: Acoustical door assemblies to include doors, frames, and door hardware to include gasketing systems, retainers and retainer covers, automatic or fixed door bottoms, cam-lift hinges, thresholds, and sills, required to achieve specified performance requirements.
   B. Performance requirements: Sound Transmission Coefficient rating as indicated in the drawings for installed assembly, when tested as operable door assembly in accordance with ASTM E 90 and ASTM E 413.

1.05 SUBMITTALS
   A. Submit under provisions of Section 01 3000.
   B. Product data: Indicate door materials and construction.
   C. Shop drawings: Indicate door opening criteria, elevations, sizes, types, swings; identify and detail cutouts.
   D. Quality assurance submittals:
   E. Test Reports: Certified laboratory reports, performed in accordance with ASTM E90 and ASTM E 413, from independent testing laboratory qualified under the National Voluntary Laboratory Accreditation Program (NVLAP) supporting compliance of assemblies to specified requirements.
1. Minimum five (5) field tests, performed in accordance with ASTM E 336 and ASTM E 413 by five separate independent testing agencies, substantiating acoustical performance when installed at no less than four (5) FSTC ratings below the specified STC rating.

G. Contractor's certification that:
   1. Products of this section, as provided, meet or exceed specified requirements.
   2. Manufacturer of products of this section meet specified qualifications.

H. Manufacturer's instructions: Printed installation instructions for each component.

I. Closeout submittals:
   1. Warranty documents, executed by manufacturer in Owner's name.
   2. Operation and maintenance data for assembly components.

1.06 QUALITY ASSURANCE

A. Manufacturer: Minimum five (5) years documented experience producing systems specified in this section.

B. Installer: Minimum five (5) years documented experience installing systems specified in this section, and approved by manufacturer.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Store frames in accordance with requirements of HMMA 840.

B. Store steel doors in accordance with requirements of HMMA 840.

C. Remove wraps or covers from doors and frames upon delivery at the building site; clean and touch-up scratches or disfigurement caused by shipping or handling promptly with rust inhibitive primer.

D. Store units on planks or dunnage in a dry location; store doors in a vertical position spaced by blocking.

E. Store units covered to protect them from damage, but permitting air circulation.

1.08 SCHEDULING

A. Furnish manufacturer's mounting templates for door hardware specified in Section 08 7100 to manufacturer of products of this section in time for factory preparation for door hardware.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Basis of Design Manufacturer: Industrial Acoustics Co, Inc (IAC).
   1. Basis of Design Product: “Noise Lock” acoustic doors and frames with cam lift hinges and split frames as manufactured by Industrial Acoustics Co, Inc.

B. Unless otherwise specified for an individual product or material, supply all products specified in this section from the same manufacturer.

C. Substitutions: Permitted in accordance with 01 6000 – Product Requirements.

2.02 MANUFACTURED ASSEMBLIES (NOISE LOCK DOORS)

A. Door leaf(s) minimum thickness:
   1. STC 51 Rating, 2 ½”
   2. Door leaf(s) and door stiffeners are to be fabricated from 14 gauge cold rolled, galvannealed steel with an A60 coating weight, and filled with 6 lb density, sound absorbing, and damping elements.
B. Frame(s) shall be fabricated from 14 gauge cold rolled, galvannealed steel with an A60 coating weight and furnished "split" in two pieces, inside and outside, that are mitered and welded together allowing for easy installation into either existing or new construction openings.

C. Acoustic seals: Doorjambs, meeting stiles of double doors and at the head of the door and frame shall receive self-aligning magnetic compression seals. Provide fire resistant seals if are UL rated, Door(s) to be held in closed position by magnetic force of perimeter seals.
1. Acoustic labyrinth shall be created when door is in closed position. Bottom of door leaf shall contain continuous, adjustable, gravity-activated seal that shall compress against the floor as the door is closed. Raised sills and threshold drop seals will not be acceptable.
2. Acoustic Seal assemblies as follows: STC 51, Double magnetic type.

D. Jamb anchors: Provide jamb anchors as determined by wall construction. Anchors are to be spaced at 12" on center maximum and are to be of a corrosion resistant material.

E. Hardware
1. Hinges: IAC, cam-lift, butt-type, hinges, US26D finish. Hinge manufacturer to furnish laboratory test data certifying that hinges of identical design have been cycled a minimum of 125,000 times while supporting a door leaf weighing a minimum of 350 lbs.
   a. Quantities of hinges as follows:
      (1) For door leaf thickness less than or equal to 2 ½":
         Two (2) hinges required per leaf for openings up to and including 96" high
         Three (3) hinges required per leaf for openings up to and including 120" high
   2. Closers: "LCN" or "Norton", factory installed.
   3. Pull Handles: 1" diameter x 9" overall length, 3" projection, US28 finish, factory installed.
   4. Push Plates: 4" wide x 16" high x .050" thick, US32D finish, factory installed.
   5. Latchsets/Locksets: Provided and installed by door manufacturer. Refer to finish hardware section for manufacturer, type and details.
   6. Exit Devices: Provided and installed by door manufacturer. Refer to finish hardware section for manufacturer, type and details.
   7. Flushbolts: "Glynn-Johnson", surface mounted to inactive leaf, top & bottom (used on double leaf doors). Factory installed.
   8. Coordinators: "Dorma" (used on double leaf doors when both leaves need to be active). Factory installed.

F. Hardware Reinforcement
1. Hinges: Minimum of ¼" thick x 2" wide x 7 ½" long.
2. Frames: Minimum of 3/16" thick for strikes and #11 (3 mm) gauge for closers.
3. Doors: Minimum of #11 gauge for lock boxes and closers.

G. Glazing
1. Non-Fire Rated: Provide factory-installed, aluminum extruded stops and moldings with true mitered corners for double, glazed assemblies. Size of vision lite is to be determined from the door schedule.
2. Glass pane(s) minimum thickness:
   a. STC 51 Rating, ¼" interior, ¼" exterior – double pane.
   b. Glass type shall be: ¼" Laminated Safety Glass.

2.03 PRE-HUNG

A. Assembly and adjustment of door leaf, frame, acoustic seals, hinges and associated finish hardware shall take place at the factory to insure ease of installation, reliable operation and acoustic performance. The entire manufactured assembly shall be shipped to the job site ready to install and operate.
2.04 FABRICATION
   A. General: Fabricate units to be rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practical, fit and assemble units in the manufacturer’s plant. Identify work that is not permanently factory-assembled before shipment to ensure proper assembly at the Project site. Weld exposed joints continuously: grind, fill dress and make smooth flush and invisible.

2.05 FACTORY FINISH
   A. Doors and frames shall receive a shop coat of a rust-inhibitive primer. The primer shall be applied over properly prepared metal, in accordance with the manufacturer’s standard shop prime coat procedure and oven-baked dry.
   B. Perform finish painting under the painting Section 09 9000 – Paints and Coatings.

PART 3 - EXECUTION

3.01 MANUFACTURER’S INSTRUCTIONS
   A. Compliance: Comply with manufacturer’s product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 PREPARATION
   A. Adjacent Surfaces Protection: Protect adjacent work areas and finish surfaces from damage during product installation.
   B. Adjacent Construction: Coordinate door assembly details with details of adjacent work to ensure proper attachments and clean junctions.

3.03 INSTALLATION
   A. Install work in accordance with reviewed shop drawings and these specifications using only factory-trained personnel as required by the Manufacturer and approved by the Architect.
      1. Hang doors and adjust for free swinging operation without binding, sticking, sagging or excessive clearances.
      2. During installation, solidly pack acoustic insulation around frames that are installed in stud and gypsum-wallboard partitions.
      3. Caulk exterior joint prior to painting.
      4. Install sound control door assemblies during finish phase of construction to protect units from damage.
      5. When installation is otherwise complete, adjust operating hardware for proper operation and function.

3.04 FIELD QUALITY CONTROL
   A. Upon completion of this portion of work, and prior to its acceptance by the Owner, secure a visit to the job site by a qualified representative of the manufacturer of the acoustical door system(s) to confirm that installation is in conformance with the manufacturer’s recommendations.

3.05 FIELD TESTING
   A. Testing Agency: Owner may, at its discretion, employ and pay an independent testing agency to perform sound control field-testing.
      1. Door Selection: Randomly selected by Owner, except not-completely installed sound doors.
      2. Testing Requirements: Conduct field tests according to ASTM E336 with results calculated according to ASTM E413 to confirm that the operating field NIC values are within 5 dB of laboratory STC values.
      3. Test results shall be reported promptly and in writing by testing agency to Owner, Contractor and Architect.
4. Repair or replace components of sound control doors where test results indicate STC rating does not meet requirements.

3.06 DEMONSTRATION

A. Instruct the Owner's maintenance personnel regarding operation and maintenance of all acoustic doors.

END OF SECTION
SECTION 08 4100
ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Section Includes: Thermally broken aluminum entrances and storefront systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.

B. Section Includes: Swing Door Entrances; Wide stile, 5" vertical face dimension, 2" depth, 3/16" wall thickness. For high traffic applications.

C. Related Sections:
   1. Section 07 9005 – Joint Sealers, for joint sealants installed as part of aluminum entrance and storefront systems
   2. Section 08 7100 – Door Hardware, for hardware required.

1.02 REFERENCES

A. AAMA 503 Voluntary Specification for Field Testing of Metal Storefronts, Curtain Walls and Sloped Glazing Systems


1.03 SYSTEM DESCRIPTION

A. Storefront System Performance Requirements:
   1. Wind loads: Provide framing system; include anchorage, capable of withstanding wind load design pressures required by applicable design codes.
   2. Air infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a static air pressure differential of 6.24 psf.
   3. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 8 psf as defined in AAMA 501.
4. Uniform Load: A static air design load of 20 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

5. Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than:
   a. Glass to Exterior – 0.47 (low-e) or 0.61 (clear)
   b. Glass to Center – 0.44 (low-e) or 0.61 (clear)
   c. Glass to Interior – 0.41 (low-e) or 0.56 (clear)

6. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than:
   a. Glass to Exterior – 70 frame and 69 glass (low-e) or 69 frame and 58 glass (clear).
   b. Glass to Center – 62 frame and 68 glass (low-e) or 63 frame and 56 glass (clear).
   c. Glass to Interior – 56 frame and 67 glass (low-e) or 54 frame and 58 glass (clear).

B. Entrance Performance Requirements:
   1. Air Infiltration: For single acting offset pivot or butt hung entrances in the closed and locked position, the test specimen shall be tested in accordance with ASTM E 283 at a pressure differential of 6.24 psf for single doors and 1.567 psf for pairs of doors. A single 3'0" x 7'0" entrance door and frame shall not exceed 0.50 cfm per linear foot of perimeter crack. A pair of 6'0" x 7'0" entrance doors and frame shall not exceed 1.0 cfm per linear foot of perimeter crack.
   2. Structural: Corner strength shall be tested per manufacturer’s dual moment load test procedure and certified by an independent testing laboratory to ensure weld compliance and corner integrity.

1.04 SUBMITTALS
A. General: Prepare, review, approve, and submit specified submittals in accordance with Section 01 3000 – Administrative Requirements. Provide product data, shop drawings, and samples. Provide manufacturers written installation instructions.

B. Quality Assurance/Control Submittals:
   1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05 WARRANTY
A. Manufacturer’s Product Warranty: Submit, for Owner’s acceptance, manufacturer’s warranty for entrance system as follows:
   1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by manufacturer. In addition, welded door corner construction shall be supported with a limited lifetime warranty for the life of the door under normal use.

B. The Warranties submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and the laws of governing jurisdictions and is in addition to and runs concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

1.06 MOCK-UP
A. Construct mock-up of storefront system in conformance with requirements of Section 01 4000.

1.07 QUALITY ASSURANCE
A. Qualifications:
1. Installer Qualifications: Installer experienced to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.

2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.

B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.

B. Packing, Shipping, Handling and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle framing material and components to avoid damage. Protect framing material against damage from elements, construction activities, and other hazards before, during and after framing installation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Drawings and specifications are based on manufacturer's literature from the Kawneer Company Inc. unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01 6000 – Product Requirements.

B. Acceptable Manufacturer: Kawneer Company, Inc. www.kawneer.com
   1. Substitutions: Permitted under provisions of Section 01 6000.

   1. Product: Trifab® VG 451T (thermal) Framing System
   2. Framing Member Profile: 2” x 4-1/2” nominal dimension; Front Glazed (Type B); Shear Block Fabrication.
   3. Finish/Color: See 2.06 Finishes.

   1. Product: Series 500 Heavy Wall.
      a. Vertical Stile: 5 inch.
      b. Top Rail: 5 inch.
      c. Bottom Rail: 6-1/2 inch.
   2. Major portions of the door members to be 0.188” nominal in thickness and glazing molding to be 0.05” thick.
   3. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.
   4. Provide adjustable glass jacks to help center the glass in the door opening.
   5. Finish/Color: See 2.06 Finishes.
   6. Substitutions: Permitted under provisions of Section 01 6000.

2.02 MATERIALS

A. Aluminum Framing and Components:
   1. Aluminum Extrusions: Alloy and temper recommended by sliding aluminum-framed glass door manufacturer for strength, corrosion resistance, and application of required finish and not less than 0.090” wall thickness at any location for the main frame and sash members.
2. Fasteners: Aluminum, nonmagnetic stainless steel or other materials to be non-corrosive and compatible with sliding aluminum-framed glass door members, trim hardware, anchors, and other components.

3. Anchors, Clips, and Accessories: Aluminum, nonmagnetic stainless steel, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

4. Reinforcing Members: Aluminum, nonmagnetic stainless steel, or nickel/chrome-plated steel complying with ASTM B 456 for Type SC 3 severe service conditions, or zinc-coated steel or iron complying with ASTM B 633 for SC 3 severe service conditions or other suitable zinc coating; provide sufficient strength to withstand design pressure indicated.

5. Weather Seals: Provide weather stripping with integral barrier fin or fins of semi-rigid, polypropylene sheet or polypropylene-coated material. Comply with AAMA 701/702.

2.03 ACCESSORIES

A. Fasteners: Where exposed, shall be Stainless Steel.

B. Gaskets: Glazing gaskets shall be extruded EPDM rubber.

C. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

D. Thermal Barrier:
   1. Thermal break with a 1/4" separation consisting of a two part chemically curing, high density polyurethane which is mechanically and adhesively joined to aluminum storefront sections. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

E. Entrance Hardware: Specified in Section 08 7100 – Door Hardware.
   1. The finish hardware supplier shall be responsible for furnishing physical hardware to the entrance manufacturer prior to fabrication, and for coordinating hardware delivery requirements with the hardware manufacturer, the Contractor and the entrance manufacturer to insure the building project is not delayed.

2.05 FABRICATION

A. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly. Enable installation and dynamic movement of perimeter seal.

B. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.

C. Prepare components to receive anchor devices. Fabricate anchors.

D. Arrange fasteners and attachments to conceal from view.

E. Entrance System Fabrication:
   1. Door corner construction shall consist of mechanical clip fastening, SIGMA deep penetration plug welds and 1-1/8" long fillet welds inside and outside of all four corners. Glazing stops shall be hook-in type with EPDM glazing gaskets reinforced with non-stretchable cord.
   2. Accurately fit and secure joints and corners. Make joints hairline in appearance.
   3. Prepare components with internal reinforcement for door hardware.
   4. Arrange fasteners and attachments to conceal from view.

2.06 FINISHES

A. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to
minimize contrast.

C. Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

   1. Color: Dark Bronze.

2.07 SOURCE QUALITY CONTROL

A. Source Quality: Provide aluminum framing specified herein from a single source.
   1. Building Enclosure System: When aluminum framing is part of a building enclosure system, including entrances, windows, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.

B. Fabrication Tolerances: Fabricate aluminum framing in accordance with framing manufacturer's prescribed tolerances.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Site Verification of Conditions: Verify substrate conditions installed under other sections are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive storefront system and sill plate is level in accordance with manufacturer's acceptable tolerances.
   1. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

3.02 FRAMING SYSTEM INSTALLATION

A. General: Install framing system in accordance with manufacturer's instructions and AAMA storefront and entrance guide specifications manual.

B. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.

C. Weathertight Construction: Install sill members and other members in a bed of sealant or with joint filler or gaskets, to provide weathertight construction. Coordinate installation with wall flashings and other components of construction.

D. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

E. Provide alignment attachments and shims to permanently fasten system to building structure.

F. Align assembly plumb and level, free of warp and twist. Maintain assembly dimensional tolerances aligning with adjacent work.

G. Set thresholds in bed of mastic and secure.

H. Adjusting: Adjust operating hardware for smooth operation.

J. Related Products Installation Requirements:

3.03 FIELD QUALITY CONTROL

A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not
meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

1. Testing: Testing shall be performed by a qualified independent testing agency. Refer to Division 1 Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.
   a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², whichever is greater.
   b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf.

B. Manufacturer's Field Services: Provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04 PROTECTION AND CLEANING

A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.

B. Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance. Remove construction debris from project site and legally dispose of debris.

END OF SECTION
PART 1 - GENERAL

1.01 SUMMARY
A. Provide sound control window assemblies where shown on the Drawings, as specified herein, and listed on the Window Schedule. The work includes window assemblies complete with frames, stops, glazing, sound-absorbing material and concealed fasteners factory installed. Glass and glazing material are factory assembled in frame and shipped complete as one unit.

1.02 SYSTEM PERFORMANCE REQUIREMENTS
A. Sound Rating: Provide window assemblies that have been fabricated as sound-retardant units, tested according to ASTM E 90 and have the following certified Sound Transmission Class (STC) rating as determined according to ASTM E 413.
1. STC Rating 53

1.03 SUBMITTALS
A. Comply with pertinent provisions of the Contract and Division 1.
B. Product Data: Within 30 calendar days after the Contractor has received the Owner’s Notice to Proceed, submit:
   1. Material lists of items provided under this Section.
   2. Manufacturer’s specifications and other data needed to prove compliance with the specified requirements.
   3. Shop Drawings showing details of each frame type, elevations of door designs, details of openings, and details of construction, installation and anchorage.
   4. Manufacturer’s recommended installation procedures which, when approved by the Architect, will become the basis for accepting or rejecting actual installation procedures used on the work.
   5. Test Reports from a qualified independent testing agency indicating and interpreting test results from Part 3 of this Section relative to compliance of sound ratings with the indicated requirements.

1.04 QUALITY ASSURANCE
A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
B. Acoustical Performance
   1. The acoustical window manufacturer will be required to submit acoustical performance data in the form of up-to-date test reports from an independent testing laboratory indicating the windows to be provided will have the required Sound Transmission Class Rating (ASTM E-90-90).
   2. For the required STC rating, refer to window schedule drawing.
   3. Owner may at his option order performance tests of installed window assemblies by an independent consultant to verify compliance with the specifications. Any discrepancies shall be repaired or replaced without cost to the Owner.
C. Single-Source Responsibility: Provide sound control windows, including stops, glazing, frame and sound-absorbing material essential for sound control as an assembly and by a single firm specializing in producing this type of work for a minimum of ten (10) years.
1.05 DELIVERY, STORAGE AND HANDLING
   A. Use all means necessary to protect the materials of this section before, during and after installation and to protect the installed work and materials of all other trades.

1.06 WARRANTY
   A. Acoustic window materials and associated hardware shall be guaranteed against defective workmanship for one (1) year from date of shipment.

PART 2 - PRODUCTS

2.01 MANUFACTURERS
   A. Basis of Design Manufacturer: Industrial Acoustics Co, Inc (IAC).
      1. Basis of Design Product: “Noise Lock” acoustic window(s) and frame(s) with stops, glazing, sound-absorbing material, and concealed fasteners as manufactured by by Industrial Acoustics Co, Inc.
   B. Unless otherwise specified for an individual product or material, supply all products specified in this section from the same manufacturer.
   C. Substitutions: Permitted in accordance with 01 6000 – Product Requirements.

2.02 MANUFACTURED ASSEMBLIES (NOISE LOCK WINDOWS)
   A. Glass pane(s) minimum thickness:
      1. STC 53 Rating, ¼” interior, ¼” exterior – double pane.
      2. Glass type shall be: ¼” Laminated Safety Glass.
   B. Frame(s) shall be 1 ¼” thick, fabricated from not less than 12 gauge cold rolled, galvannealed steel with an A60 coating weight, reinforced and filled with sound-absorbing acoustic fill. Inside and outside corners shall be mitered and interlocked to hairline measurements, made square, continuously welded, and ground smooth, flush and invisible. The window assembly can be installed into either existing or new construction openings.
   C. Acoustic seals for glazing shall be vibration-isolating resilient gaskets, U-shaped and continuous santoprene UV grade 65-75 durometer black. Self-contained, sound absorptive interior perimeter of not less than 22 gauge steel shall be perforated and pre-finished black. Desiccant material shall be incorporated into multiple glazed units.
   D. Stops: Provide stops that are 1” high minimum and readily removable, fabricated from not less than 16 gauge rolled steel sections predrilled and aligned with frame to form tight square acoustical joints. Stop fasteners shall be concealed.
   E. Assembly: The assembly of the acoustic window units including frames, stops, glazing, acoustic seals, sound-absorbing material and concealed fasteners shall take place at the factory to insure required noise reduction is achieved. Glazing shall not need to be removed to facilitate fastening or anchoring at the job site.

2.03 FABRICATION
   A. General: Fabricate units to be rigid, neat in appearance and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practical, fit and assemble units in the manufacturer’s plant. Identify work that is not permanently factory-assembled before shipment to ensure proper assembly at the Project site. Weld exposed joints continuously: grind, fill dress and make smooth flush and invisible.
2.04 FACTORY FINISH
   A. Frames shall receive a shop coat of a rust-inhibitive primer. The primer shall be applied over properly prepared metal, in accordance with the manufacturer's standard shop prime coat procedure and oven-baked dry.
   B. Others, as required, will perform finish painting, under the painting Section 09 9000 – Paints and Coatings.

PART 3 - EXECUTION

3.01 MANUFACTURER’S INSTRUCTIONS
   A. Compliance: Comply with manufacturer’s product data, including product technical bulletins, product catalog installation instructions and product carton instructions.

3.02 PREPARATION
   A. Adjacent Surfaces Protection: Protest adjacent work areas and finish surfaces from damage during product installation.
   B. Adjacent Construction: Coordinate window assembly details with details of adjacent work to ensure proper attachments and clean junctions.

3.03 INSTALLATION
   A. Install work in accordance with reviewed shop drawings and these specifications using only factory-trained personnel as required by the Manufacturer and approved by the Architect.
      1. Install windows and shim accordingly to allow for a plumb and square installation without excessive clearances.
      2. During installation, solidly pack acoustic insulation around frames that are installed in stud and gypsum-wallboard partitions.
      3. Caulk exterior joint prior to painting.
      4. Install sound control window assemblies during finish phase of construction to protect units from damage.

3.04 FIELD QUALITY CONTROL
   A. Upon completion of this portion of work, and prior to its acceptance by the Owner, secure a visit to the job site by a qualified representative of the manufacturer of the acoustical door system(s) to confirm that installation is in conformance with the manufacturer’s recommendations.

3.05 FIELD TESTING
   A. Testing Agency: Owner may, at its discretion, employ and pay an independent testing agency to perform sound control field-testing.
      1. Door Selection: Randomly selected by Owner, except not-completely installed sound doors.
      2. Testing Requirements: Conduct field tests according to ASTM E336 with results calculated according to ASTM E413 to confirm that the operating field NIC values are within 5 dB of laboratory STC values.
      3. Test results shall be reported promptly and in writing by testing agency to Owner, Contractor and Architect.
      4. Repair or replace components of sound control windows where test results indicate STC rating does not meet requirements.
3.06 DEMONSTRATION

A. Instruct the Owner’s maintenance personnel regarding the maintenance of all acoustic windows.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Hardware for wood, aluminum, and hollow metal doors.
B. Hardware for fire-rated doors.
C. Electrically operated and controlled hardware.
D. Thresholds.
E. Weatherstripping, seals and door gaskets.

1.02 RELATED REQUIREMENTS
A. Section 08 1113 - Hollow Metal Doors and Frames.
B. Section 08 1416 - Flush Wood Doors.
C. Section 08 4313 - Aluminum-Framed Storefronts: Hardware for doors in storefront is scheduled in this section.

1.03 REFERENCE STANDARDS
C. BHMA A156.2 - American National Standard for Bored and Preassembled Locks & Latches; Builders Hardware Manufacturers Association; 2011 (ANSI/BHMA A156.2).
D. BHMA A156.6 - American National Standard for Architectural Door Trim; Builders Hardware Manufacturers Association; 2010 (ANSI/BHMA A156.6).
E. BHMA A156.8 - American National Standard for Door Controls - Overhead Stops and Holders; Builders Hardware Manufacturers Association, Inc.; 2010 (ANSI/BHMA A156.8).
F. BHMA A156.13 - American National Standard for Mortise Locks & Latches Series 1000; Builders Hardware Manufacturers Association; 2012 (ANSI/BHMA A156.13).
H. DHI (LOCS) - Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames; Door and Hardware Institute; 2004.
I. DHI WDHS.3 - Recommended Locations for Architectural Hardware for Flush Wood Doors; Door and Hardware Institute; 1993; also in WDHS-1/WDHS-5 Series, 1996.

1.04 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the manufacture, fabrication, and installation of products that door hardware will be installed upon.
B. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
C. Convey Owner's keying requirements to manufacturers.
D. Preinstallation Meeting: Convene a preinstallation meeting one week prior to commencing work of this section; require attendance by all affected installers.

E. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.05 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project.

C. Hardware Schedule: Detailed listing of each item of hardware to be installed on each door. Use door numbering scheme as included in the Contract Documents. Identify electrically operated items and include power requirements.

D. Keying Schedule: Hardware supplier shall meet at jobsite with owner to secure the keying requirements, to key into the existing Corbin Russwin great, great grand master key system.

E. Samples: Prior to preparation of hardware schedule:
   1. Submit one (1) sample of hinge, latchset, lockset, and closer illustrating style, color, and finish.
   2. Samples will be returned to supplier.

F. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.

G. Maintenance Data: Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
   1. Submit manufacturer's parts lists and templates.

H. Keys: Deliver with identifying tags to Owner by security shipment direct from hardware supplier.

I. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

J. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.

K. Maintenance Materials and Tools: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.

1.06 QUALITY ASSURANCE

A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.

B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of documented experience.

C. Hardware Supplier Qualifications: Company specializing in supplying commercial door hardware with five years of experience.

D. Hardware Supplier Personnel: Employ an Architectural Hardware Consultant (AHC) to assist in the work of this section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Package hardware items individually; label and identify each package with door opening code to match hardware schedule.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide five year warranty for door closers.
PART 2 PRODUCTS

2.01 DOOR HARDWARE SUPPLIERS
A. Products specified and scheduled are from the manufacturers, as follows:

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<tr>
<th>Manufacturer</th>
<th>Code</th>
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<tr>
<td>McKinney</td>
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<td>Rixson</td>
<td>(RX)</td>
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<td>Corbin Russwin</td>
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<td>Von Duprin</td>
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<td>LCN Closers</td>
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<td>Rockwood Mfg.</td>
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<td>Pemko Mfg.</td>
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<td>Schlage Electronics</td>
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Substitutes will be allowed as defined under General Requirements, EXCEPT as clarified herein.

2.02 DOOR HARDWARE - GENERAL
A. Provide hardware specified or required to make doors fully functional, compliant with applicable codes, and secure to the extent indicated.
B. Provide items of a single type of the same model by the same manufacturer.
C. Provide products that comply with the following:
   1. Applicable provisions of federal, state, and local codes.
   5. Hardware on Fire-Rated Doors, Except Hinges: Listed and classified by UL as suitable for the purpose specified and indicated.
   6. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide hardware that enables door assembly to comply with air leakage requirements of the applicable code.
   7. Products Requiring Electrical Connection: Listed and classified by UL as suitable for the purpose specified and indicated.
D. Function: Lock and latch function numbers and descriptions of manufactures series as listed in hardware schedule.
E. Electrically Operated and/or Controlled Hardware: Provide all power supplies, power transfer hinges, relays, and interfaces required for proper operation; provide wiring between hardware and control components and to building power connection.
F. Finishes: Identified in schedule.

2.03 LOCKS AND LATCHES
A. Locks: Provide a lock for every door, unless specifically indicated as not requiring locking.
   1. If no hardware set is indicated for a swinging door provide an office lockset.
   2. Trim: Provide lever handle or pull trim on outside of all locks unless specifically stated to have no outside trim.
   3. Lock Cylinders: Provide key access on outside of all locks unless specifically stated to have no locking or no outside trim.
B. Lock Cylinders: Manufacturer’s standard tumbler type, six-pin interchangeable core, Corbin Russwin, series 8000. NO SUBSTITUTE.
   1. Provide cams and/or tailpieces as required for locking devices required.
   2. All cores to furnished “CKC” with the keyset symbol stamped on the side.
C. Keying: Grand master keyed.
   1. Include construction cores with every lock and cylinder.
   2. Key to existing keying system.
   3. Supply keys in the following quantities:
      a. (4) master keys.
b. (4) grand master keys.
c. (4) construction keys.
d. (3) change keys for each lock.
4. All keys shall be Corbin Russwin restricted keyway section, as directed by the owner. All keys shall be bow style #12, with no logo, with “DO NOT DUPLICATE” stamped on one side, and the keyset symbol on the other side.
D. Latches: Provide a latch for every door that is not required to lock, unless specifically indicated "push/pull" or "not required to latch".

2.04 HINGES
A. Hinges: Provide hinges on every swinging door.

2.05 PIVOTS
A. Pivots - Basis of Design: Rixson 147 and M19, made from brass or bronze material.

2.06 PUSH/PULLS
A. Push/Pulls - Basis of Design: Rockwood Mfg. with BF "barrier free" clearances.

2.07 MORTISE LOCKSETS
A. Locking Functions: As defined in BHMA A156.13, and as follows: Corbin Russwin, ML2000 series, with LWM trim design, as specified. NO SUBSTITUTE.

2.08 FLUSHBOLTS AND COORDINATORS
A. Flushbolts - Basis of Design: Rockwood Mfg. as scheduled.

2.09 ELECTRIC STRIKES
A. Electric Strikes - Basis of Design: Von Durpin, 6200 series, as scheduled.

2.10 EXIT DEVICES
A. Exit Devices - Basis of Design: Von Durpin, 98/99 series. NO SUBSTITUTE.

2.11 CLOSERS
A. Closers - Basis of Design: LCN 4040 XP series. NO SUBSTITUTE.

2.12 STOPS AND HOLDERS
A. Stops and Holders - Basis of Design: Rockwood Mfg. as scheduled.

2.13 GASKETING AND THRESHOLDS
A. Gasketing and Thresholds - Basis of Design: Pemko Mfg. as scheduled.

2.14 PROTECTION PLATES AND ARCHITECTURAL TRIM
A. Protection Plates and Architectural Trim - Basis of Design: Rockwood Mfg, as scheduled.

2.15 KEY CONTROLS
A. All permanent keys, including change keys, master keys, and grand master keys, shipped from factory direct to the university lockshop.
B. All permanent cores shall be shipped from factory direct to the university lockshop.
C. All permanent cores to be installed by university staff. The temporary cores will be returned to the construction manager, to be returned to the hardware supplier.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that doors and frames are ready to receive work; labeled, fire-rated doors and frames are present and properly installed, and dimensions are as indicated on shop drawings.
B. Verify that electric power is available to power operated devices and of the correct characteristics.
3.02 INSTALLATION
A. Install hardware in accordance with manufacturer's instructions and applicable codes.
B. Use templates provided by hardware item manufacturer.
C. Install hardware on fire-rated doors and frames in accordance with code and NFPA 80.
D. Mounting heights for hardware from finished floor to center line of hardware item.
   1. For steel doors and frames: Comply with DHI "Recommended Locations for Architectural Hardware for Steel Doors and Frames."
   2. For Wood Doors: Comply with DHI "Recommended Locations for Architectural Hardware for Wood Flush Doors."
E. Set exterior door thresholds with full-width bead of elastomeric sealant on each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.

3.03 FIELD QUALITY CONTROL
A. Provide an Architectural Hardware Consultant to inspect installation and certify that hardware and installation has been furnished and installed in accordance with manufacturer's instructions and as specified.

3.04 ADJUSTING
A. Adjust work under provisions of Section 01 7000.
B. Adjust hardware for smooth operation.
C. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.

3.05 CLEANING
A. Clean adjacent surfaces soiled by hardware installation. Clean finished hardware per manufacturer's instructions after final adjustments has been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

3.06 PROTECTION
A. Protect finished Work under provisions of Section 01 7000.
B. Do not permit adjacent work to damage hardware or finish.

3.07 SCHEDULE - ATTACHED.

END OF SECTION
Hardware Sets

SET #01

Doors: 100A

<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>2 Pivot Set</td>
<td>147 3/4&quot; OFFSET</td>
<td>613 RX</td>
<td></td>
</tr>
<tr>
<td>2 Side Pivot</td>
<td>M19</td>
<td>613 RX</td>
<td></td>
</tr>
<tr>
<td>2 Power Pivot</td>
<td>EPT 10 CON</td>
<td>313 VO</td>
<td></td>
</tr>
<tr>
<td>1 Exit Device</td>
<td>QEL RX 9849EO CON</td>
<td>313 VO</td>
<td></td>
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<tr>
<td>1 Exit Device</td>
<td>QEL RX 9849NL-OP x 110MD-NL CON</td>
<td>US10B, 313 VO</td>
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<tr>
<td>1 Rim Cylinder</td>
<td>3080-178-6 CT6R</td>
<td>613 CR</td>
<td></td>
</tr>
<tr>
<td>1 Core</td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
<td>613 CR</td>
<td></td>
</tr>
<tr>
<td>2 Door Pull</td>
<td>BF158</td>
<td>313 RO</td>
<td></td>
</tr>
<tr>
<td>1 Closer</td>
<td>4040 XP SCUSH 30 SHOE SUPPORT 61 STOP</td>
<td>DKBRZ LC</td>
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<tr>
<td>1 Closer</td>
<td>4642 REG SRT</td>
<td>DKBRZ LC</td>
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<tr>
<td>1 Wireless Receiver</td>
<td>8310-865</td>
<td>LC</td>
<td></td>
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<tr>
<td>2 Wire Harness</td>
<td>CON-192P</td>
<td>SC</td>
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<tr>
<td>2 Wire Harness</td>
<td>CON-26</td>
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<tr>
<td>2 Switch</td>
<td>7764</td>
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<tr>
<td>1 Power Supply</td>
<td>PS902</td>
<td>VO</td>
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<tr>
<td>1 Wall Actuator</td>
<td>LCN-8310-853</td>
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NOTE: Weatherstrip and threshold by door supplier. Card Reader, door position switch, and connection to access control system, by security integrator for CBORD. Automatic operator to operate with RF transmitters furnished by Owner. If required to be operated by card reader, integration in to access control system, by security integrator.

SET #02

Doors: 100B

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<th>Notes</th>
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<tbody>
<tr>
<td>2 Pivot Set</td>
<td>147 3/4&quot; OFFSET</td>
<td>613 RX</td>
<td></td>
</tr>
<tr>
<td>2 Side Pivot</td>
<td>M19</td>
<td>613 RX</td>
<td></td>
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<tr>
<td>2 Dummy Push Bar</td>
<td>350</td>
<td>313 VO</td>
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<tr>
<td>2 Door Pull</td>
<td>BF158</td>
<td>313 RO</td>
<td></td>
</tr>
<tr>
<td>1 Closer</td>
<td>4040 XP SCUSH 30 SHOE SUPPORT 61 STOP</td>
<td>DKBRZ LC</td>
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<tr>
<td>1 Closer</td>
<td>4642 REG SRT</td>
<td>DKBRZ LC</td>
<td></td>
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<tr>
<td>1 Wireless Receiver</td>
<td>8310-865</td>
<td>LC</td>
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<tr>
<td>1 Wall Actuator</td>
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NOTE: Weatherstrip and threshold by door supplier. Automatic operator to operate with RF transmitters, furnished by Owner.
### Set #03

**Doors: 111B, 125B**

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<tr>
<td>3 Hinges</td>
<td>TA2714 4 1/2 X 4 1/2 NRP</td>
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<tr>
<td>1 Exit Device</td>
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<td>313</td>
<td>VO</td>
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<td>1 Closer</td>
<td>4040 XP SCUSH TBSRT</td>
<td>DKBRZ</td>
<td>LC</td>
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<tr>
<td>1 Protection Plate</td>
<td>K1050 10&quot; x 34&quot;</td>
<td>10BE</td>
<td>RO</td>
</tr>
<tr>
<td>1 Switch</td>
<td>7764</td>
<td></td>
<td>LO</td>
</tr>
<tr>
<td>1 Weatherstrip</td>
<td>303 DV 1 x 36&quot; 2 x 84&quot; TKSP8</td>
<td></td>
<td>PE</td>
</tr>
<tr>
<td>1 Raindrip</td>
<td>346 D 40&quot; TKSP8</td>
<td></td>
<td>PE</td>
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<tr>
<td>1 Door Bottom</td>
<td>315 DN 36&quot; TKSP8</td>
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<td>PE</td>
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<tr>
<td>1 Threshold</td>
<td>170 A 36&quot; Tapcon Screws</td>
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*NOTE: Connection of door position switch to access control system, by security integrator.*

### Set #04

**Doors: 124**

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<td>MC</td>
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<td>1 Lockset</td>
<td>ML2067 LWM CT6R SA</td>
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<tr>
<td>1 Core</td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
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<td>CR</td>
</tr>
<tr>
<td>1 Closer</td>
<td>4040 XP SCUSH TBSRT</td>
<td>DKBRZ</td>
<td>LC</td>
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<tr>
<td>1 Switch</td>
<td>7764</td>
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<td>LO</td>
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<tr>
<td>1 Weatherstrip</td>
<td>303 DV 1 x 36&quot; 2 x 84&quot; TKSP8</td>
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<td>1 Raindrip</td>
<td>346 D 40&quot; TKSP8</td>
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<td>1 Threshold</td>
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*NOTE: Connection of door position switch to access control system, by security integrator.*

### Set #05

**Doors: 111A, 125A, 217**

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<td>1 Fire Exit Device</td>
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<td>VO</td>
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<tr>
<td>1 Core</td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
<td>613</td>
<td>CR</td>
</tr>
<tr>
<td>1 Mortise Cylinder</td>
<td>1080-114-A02-6 CT6R</td>
<td>613</td>
<td>CR</td>
</tr>
<tr>
<td>1 Closer</td>
<td>4040 XP REG/PA TBSRT</td>
<td>DKBRZ</td>
<td>LC</td>
</tr>
<tr>
<td>1 Protection Plate</td>
<td>K1050 10&quot; x 34&quot;</td>
<td>10BE</td>
<td>RO</td>
</tr>
<tr>
<td>1 Dome Stop</td>
<td>442</td>
<td></td>
<td>US10B</td>
</tr>
<tr>
<td>1 Smoke Seal</td>
<td>S88 D 17'</td>
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### SET #06

Doors: 218

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<tr>
<td>1 Fire Exit Device</td>
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<td>613</td>
<td>US10B, 313</td>
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<tr>
<td>1 Core</td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
<td>613</td>
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<tr>
<td>1 Mortise Cylinder</td>
<td>1080-114-A02-6 CT6R</td>
<td>613</td>
<td>CR</td>
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<tr>
<td>1 Electric Strike</td>
<td>6211 24VDC CON FSE</td>
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<td>VO</td>
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<tr>
<td>1 Protection Plate</td>
<td>K1050 10&quot; x 34&quot;</td>
<td>10BE</td>
<td>RO</td>
<td></td>
</tr>
<tr>
<td>1 Dome Stop</td>
<td>442</td>
<td>US10B</td>
<td>RO</td>
<td></td>
</tr>
<tr>
<td>1 Wire Harness</td>
<td>CON-192P</td>
<td></td>
<td>SC</td>
<td></td>
</tr>
<tr>
<td>1 Smoke Seal</td>
<td>S88 D 17'</td>
<td></td>
<td>PE</td>
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**NOTE:** Card reader, power supply, and connection to the access control system, by security integrator.

### SET #07

Doors: 129

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<td>MC</td>
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<tr>
<td>2 Hinges</td>
<td>5BB1 4 1/2 x 4 1/2 CON TW4</td>
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<td>1 Exit Device</td>
<td>QEL 9827NL-OP x 110MD-NL LBR</td>
<td>US10B, 313</td>
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<td>1 Exit Device</td>
<td>QEL 9827EO LBR</td>
<td>313</td>
<td>VO</td>
<td></td>
</tr>
<tr>
<td>1 Rim Cylinder</td>
<td>3080-178-6 CT6R</td>
<td>613</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>1 Core</td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
<td>613</td>
<td>CR</td>
<td></td>
</tr>
<tr>
<td>2 Door Pull</td>
<td>BF158</td>
<td>313</td>
<td>RO</td>
<td></td>
</tr>
<tr>
<td>2 Closer</td>
<td>4040 XP REG/PA TBSRT</td>
<td>DKBRZ</td>
<td>LC</td>
<td></td>
</tr>
<tr>
<td>2 Protection Plate</td>
<td>K1050 10&quot; x 34&quot;</td>
<td>10BE</td>
<td>RO</td>
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<tr>
<td>2 Dome Stop</td>
<td>442</td>
<td>US10B</td>
<td>RO</td>
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<tr>
<td>1 Power Supply</td>
<td>PS902</td>
<td></td>
<td>VO</td>
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<tr>
<td>2 Door Silencers</td>
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<td>GREY</td>
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<td>2 Wire Harness</td>
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<td>CON-12</td>
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**NOTE:** Card reader, and connection to the access control system, by security integrator.

### SET #08

Doors: 101A, 201A

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<tr>
<td>1 Lockset</td>
<td>ML2053 LWM CT6R SA</td>
<td>613</td>
<td>CR</td>
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</tr>
<tr>
<td>1 Core</td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
<td>613</td>
<td>CR</td>
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</tr>
<tr>
<td>1 Closer</td>
<td>4040 XP REG/PA TBSRT</td>
<td>DKBRZ</td>
<td>LC</td>
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</tr>
<tr>
<td>1 Protection Plate</td>
<td>K1050 10&quot; x 34&quot;</td>
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<td>RO</td>
<td></td>
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<tr>
<td>3 Door Silencers</td>
<td>608</td>
<td>GREY</td>
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MWSU MASS COMM BUILDING
REES Project #21503.00

HARDWARE SCHEDULE
## SET #09

**Doors:** 101B, 201B, 202A, 202B

<table>
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<tr>
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<td>8000 KY3 RESTRICTED KEYWAY</td>
<td>613</td>
<td>CR</td>
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<td>1 Closer</td>
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<td>4040 XP REG/PA TBSRT</td>
<td>DKBRZ</td>
<td>LC</td>
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## SET #10

**Doors:** 107

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<td>10BE</td>
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<td>1 Lockset</td>
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<td>ML2053 LWM CT6R SA</td>
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<td>8000 KY3 RESTRICTED KEYWAY</td>
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<tr>
<td>1 Closer</td>
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<td>DKBRZ</td>
<td>LC</td>
</tr>
<tr>
<td>1 Protection Plate</td>
<td></td>
<td>K1050 10” x 34”</td>
<td>10BE</td>
<td>RO</td>
</tr>
<tr>
<td>1 Wall Bumper</td>
<td></td>
<td>409</td>
<td>US10B</td>
<td>RO</td>
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<tr>
<td>1 Weatherstrip</td>
<td></td>
<td>312 DR 1 x 36” 2 x 84” TKSP8</td>
<td>PE</td>
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<tr>
<td>1 Auto Door Bottom</td>
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<td>4301 DPKL 36”</td>
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<tr>
<td>1 Threshold</td>
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<td>151 A 36” Tapcon Screws</td>
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## SET #11

**Doors:** 113

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<td>ML2053 LWM CT6R SA</td>
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<tr>
<td>1 Core</td>
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<td>8000 KY3 RESTRICTED KEYWAY</td>
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<tr>
<td>1 Protection Plate</td>
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<td>K1050 10” x 34”</td>
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</tr>
<tr>
<td>1 Wall Bumper</td>
<td></td>
<td>409</td>
<td>US10B</td>
<td>RO</td>
</tr>
<tr>
<td>1 Weatherstrip</td>
<td></td>
<td>312 DR 1 x 36” 2 x 84” TKSP8</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>1 Auto Door Bottom</td>
<td></td>
<td>4301 DPKL 36”</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>1 Threshold</td>
<td></td>
<td>151 A 36” Tapcon Screws</td>
<td>PE</td>
<td></td>
</tr>
</tbody>
</table>
## SET #12

Doors: 112

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Hinges</td>
<td></td>
<td>TA2714 4 1/2 X 4 1/2</td>
</tr>
<tr>
<td>1 Hinges</td>
<td></td>
<td>5BB1 4 1/2 x 4 1/2 CON TW4</td>
</tr>
<tr>
<td>1 Electronic Lock</td>
<td></td>
<td>AD-300-MS-70-MS-TLR JD CO6</td>
</tr>
<tr>
<td>1 Core</td>
<td></td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
</tr>
<tr>
<td>1 Closer</td>
<td></td>
<td>4040 XP REG/PA TBSRT</td>
</tr>
<tr>
<td>1 Protection Plate</td>
<td></td>
<td>K1050 10&quot; x 34&quot;</td>
</tr>
<tr>
<td>1 Wire Harness</td>
<td></td>
<td>CON-38</td>
</tr>
<tr>
<td>1 Wire Harness</td>
<td></td>
<td>CON-192P</td>
</tr>
<tr>
<td>3 Door Silencers</td>
<td></td>
<td>608</td>
</tr>
</tbody>
</table>

**NOTE:** Card reader, power supply, and connection to access control system, by security integrator.

## SET #13

Doors: 105, 106, 119, 203, 204, 205, 206, 207, 211

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Details</th>
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<tbody>
<tr>
<td>3 Hinges</td>
<td></td>
<td>TA2714 4 1/2 X 4 1/2</td>
</tr>
<tr>
<td>1 Lockset</td>
<td></td>
<td>ML2053 LWM CT6R SA</td>
</tr>
<tr>
<td>1 Core</td>
<td></td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
</tr>
<tr>
<td>1 Wall Bumper</td>
<td></td>
<td>409</td>
</tr>
<tr>
<td>3 Door Silencers</td>
<td></td>
<td>608</td>
</tr>
</tbody>
</table>

## SET #14

Doors: 103, 104, 122, 123, 209, 210

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinges</td>
<td></td>
<td>TA2714 4 1/2 X 4 1/2</td>
</tr>
<tr>
<td>1 Lockset</td>
<td></td>
<td>ML2057 LWM CT6R SA</td>
</tr>
<tr>
<td>1 Core</td>
<td></td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
</tr>
<tr>
<td>1 Wall Bumper</td>
<td></td>
<td>409</td>
</tr>
<tr>
<td>3 Door Silencers</td>
<td></td>
<td>608</td>
</tr>
</tbody>
</table>

## SET #15

Doors: 121

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinges</td>
<td></td>
<td>TA2714 4 1/2 X 4 1/2</td>
</tr>
<tr>
<td>1 Lockset</td>
<td></td>
<td>ML2057 LWM CT6R SA</td>
</tr>
<tr>
<td>1 Core</td>
<td></td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
</tr>
<tr>
<td>1 Overhead Stop</td>
<td></td>
<td>10-336</td>
</tr>
<tr>
<td>3 Door Silencers</td>
<td></td>
<td>608</td>
</tr>
</tbody>
</table>
### SET #16

Doors: 127, 128, 212, 213

<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hinges</td>
<td>TA2714 4 1/2 X 4 1/2</td>
<td>3</td>
<td>10BE</td>
</tr>
<tr>
<td>Door Pull</td>
<td>BF 111 X 70C</td>
<td>1</td>
<td>RO</td>
</tr>
<tr>
<td>Push Plate</td>
<td>70F 8 X 16</td>
<td>1</td>
<td>RO</td>
</tr>
<tr>
<td>Closer</td>
<td>4040 XP REG/PA TBSRT</td>
<td>1</td>
<td>LC</td>
</tr>
<tr>
<td>Protection Plate</td>
<td>K1050 10&quot; x 34&quot;</td>
<td>1</td>
<td>RO</td>
</tr>
<tr>
<td>Wall Bumper</td>
<td>409</td>
<td>1</td>
<td>RO</td>
</tr>
<tr>
<td>Door Silencers</td>
<td>608</td>
<td>3</td>
<td>RO</td>
</tr>
</tbody>
</table>

### SET #17

Doors: 114, 115, 116, 117, 118

NOTE: All hardware by door supplier.

### SET #18

Doors: 110B

<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit Device</td>
<td>9875EO 575</td>
<td>1</td>
<td>VO</td>
</tr>
<tr>
<td>Closer</td>
<td>4040 XP SCUSH TBSRT</td>
<td>1</td>
<td>DKBRZ</td>
</tr>
</tbody>
</table>

NOTE: Balance of hardware, including hinges, and all required seals and thresholds, by door supplier.

### SET #19

Doors: 110A

<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flush Bolts</td>
<td>555 48&quot;</td>
<td>1</td>
<td>US10B</td>
</tr>
<tr>
<td>Lockset</td>
<td>ML2053 LWM CT6R SA</td>
<td>1</td>
<td>CR</td>
</tr>
<tr>
<td>Core</td>
<td>8000 KY3 RESTRICTED KEYWAY</td>
<td>1</td>
<td>CR</td>
</tr>
<tr>
<td>Closer</td>
<td>4040 XP REG/PA TBSRT</td>
<td>1</td>
<td>DKBRZ</td>
</tr>
</tbody>
</table>

NOTE: At active leaf only.

<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Duty Door Stop</td>
<td>481</td>
<td>2</td>
<td>US10B</td>
</tr>
</tbody>
</table>

NOTE: Balance of hardware, including hinges, and all required seals and threshold, by door supplier.
SECTION 08 8000
GLAZING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Glass and glazing materials for windows, and doors.
B. Glazing compounds and accessories.

1.02 RELATED SECTIONS
A. Section 07 9005 - Joint Sealers: Sealant and back-up material.
B. Section 08 4100 - Aluminum Storefronts and Entrances.

1.03 REFERENCES

1.04 PERFORMANCE REQUIREMENTS
A. Provide glass and glazing materials for continuity of building enclosure vapor retarder and air barrier:
   1. In conjunction with materials described in Section 07 9005.
   2. To utilize the inner pane of multiple pane sealed units for the continuity of the air barrier and vapor retarder seal.
   3. To maintain a continuous air barrier and vapor retarder throughout the glazed assembly from glass pane to heel bead of glazing sealant.
B. Select type and thickness of exterior glass to withstand dead loads and wind loads acting normal to plane of glass at design pressures calculated in accordance with applicable code.
   1. Use the procedure specified in ASTM E 1300 to determine glass type and thickness.
   2. Limit glass deflection to 1/200 or flexure limit of glass, whichever is less, with full recovery of glazing materials.
   3. Thicknesses listed are minimum.

1.05 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data on Glass Types: Provide structural, physical and environmental characteristics, size limitations, and special handling or installation requirements.
C. Product Data on Glazing Compounds: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.

D. Samples of each glass type indicating color and tint properties, for Architect approval.

E. Manufacturer's Certificate: Certify that glass meets or exceeds specified requirements.

1.06 QUALITY ASSURANCE


B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.

1.07 ENVIRONMENTAL REQUIREMENTS

A. Do not install glazing when ambient temperature is less than 50 degrees F.

B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.08 WARRANTY

A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.

B. Provide a five (5) year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

C. Provide a five (5) year warranty to include coverage for delamination of laminated glass and replacement of same.

D. The Warranties submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and the laws of governing jurisdictions and is in addition to and runs concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 PRODUCTS

2.01 FLAT GLASS MATERIALS

A. Basis of Design Manufacturer:
   2. Substitutions: Permitted under provisions of Section 01 6000 - Product Requirements.

B. Other Acceptable Manufacturers:
   5. Substitutions: Permitted under provisions of Section 01 6000 - Product Requirements.

C. Clear Float Glass: Clear, annealed.
   1. Comply with ASTM C 1036, Type I, transparent flat, Class 1 clear, Quality q3 glazing select.

D. Mirror Glass: Float glass, Type I, Class 1, Quality q2 (ASTM C 1036), with silvering, copper coating, and suitable protective organic coating to copper backing in accordance with GSA CID A-A-3002.
   1. Safety Backing Tape: Provide Category II safety tape with woven screen on mirror backs.
      a. Provide Category II Tape manufactured by C.R. Laurence Company or approved equal.
E. Safety Glass: Clear; fully tempered with horizontal tempering.
   1. Comply with ASTM C 1048, Condition A uncoated, Type I, transparent flat, Class 1, Quality q3 glazing select.

F. Tinted Glass: Float type, annealed, heat-absorbing and light reducing in tinted color.
   1. Comply with ASTM C 1048, Condition A uncoated, Type I, transparent flat, Class 2 tinted heat-absorbing and light reducing, Quality q3 glazing select.

G. Tinted Safety Glass: Float type, fully tempered, heat-absorbing and light reducing in tinted color.
   1. Comply with ASTM C 1048, Condition A uncoated, Type I, transparent flat, Class 2 tinted heat-absorbing and light reducing, Quality q3 glazing select.

H. Laminated Glass: Float type laminated in accordance with ASTM C1172.
   1. Laminated Safety Glass: Comply with 16 CFR 1201 test requirements for Category II.
   2. Plastic Interlayer: 0.060 inch thick, minimum.
   3. Where fully tempered is specified or required, provide glass that has been tempered by the tong-less horizontal method.
   4. Tint: Match sealed insulating glass for tint color. Provide glass manufactured by the sealed insulating glass manufacturer.

2.02 SEALED INSULATING GLASS MATERIALS

A. Drawings and specifications are based on manufacturer's literature from PPG Industries unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01 6000 – Product Requirements.

B. Basis of Design Manufacturer:
   2. Substitutions: Permitted under provisions of Section 01 6000 - Product Requirements.

C. Other Acceptable Manufacturers:
   5. Substitutions: Permitted under provisions of Section 01 6000 - Product Requirements.

2.03 SEALED INSULATING GLASS

   1. Coating: Neutral 50 (#2)
   2. Outboard Substrate: Green.
   5. Substitutions: Permitted under provisions of Section 01 6000 - Product Requirements.

B. Glass Performance Requirement
   1. Winter U-value: 0.33
   2. Summer U-value: 0.32
   3. Visible Light Out Reflectivity: 13%
   4. Visible Light In Reflectivity: 10%
   5. Shading Coefficient: 0.32
   6. Relative Heat Gain: 69
   7. Visible Light Transmittance: 42%
   8. Total Solar Energy Transmittance: 20%
   9. Ultra-violet Light Transmittance: 14%
   10. Solar Heat Gain Coefficient: 0.28
   11. Light to Solar Gain: 1.50
2.04 GLAZING MATERIALS

A. Manufacturers:
   1. Norton Performance Plastics Corp.
   4. Substitutions: Permitted under provisions of Section 01 6000 - Product Requirements.

B. Provide types for applicable setting method specified in GANA Glazing Manual and FGMA Sealant Manual except as specified otherwise. Do not use metal sash putty, nonskinning compounds, nonresilient preformed sealers or impregnated preformed gaskets.

C. Materials Exposed to View and Unpainted: Black.

D. Accessories: As required for complete installation. Include glazing points, clips, shims, angles, beads, gaskets and spacers. Provide primer-sealers and cleaners as recommended by glass and sealant manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that openings for glazing are correctly sized and within tolerance.

B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and ready to receive glazing.

3.02 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

D. Install sealants in accordance with ASTM C 1193 and FGMA Sealant Manual.

E. Install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION

A. Install glass in accordance with recommendations and procedures in GANA Glazing Manual and FGMA Sealant Manual.

B. Install glass in accordance with storefront frame manufacturer recommendations and instructions.

C. Install glass with lines or waves horizontal.

3.04 CLEANING

A. Remove glazing materials from finish surfaces.

B. Remove labels after Work is complete.

C. Clean glass and adjacent surfaces.

3.05 PROTECTION OF FINISHED WORK

A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.

END OF SECTION
SECTION 08 8300
MIRRORS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Glass mirrors.
   1. Annealed float glass.
   2. Tempered safety glass.

1.02 REFERENCE STANDARDS
D. GANA (TIPS) - Mirrors: Handle with Extreme Care (Tips for the Professional on the Care and Handling of Mirrors); Glass Association of North America; 2011.

1.03 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data on Mirror Types: Submit structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
C. Product Data on Glazing Compounds: Submit chemical, functional, and environmental characteristics, limitations, special application requirements, and identify available colors.
D. Manufacturer's Certificate: Certify that mirrors meet or exceed specified requirements.
E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE
A. Fabricate, store, transport, receive, install, and clean mirrors in accordance with recommendations of GANA (TIPS).

1.05 FIELD CONDITIONS
A. Do not install mirrors when ambient temperature is less than 50 degrees F.
B. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.06 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Provide five year manufacturer warranty for reflective coating on mirrors and replacement of same.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Mirrors:
   4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS
A. Mirror Design Criteria: Select materials and/or provide supports as required to limit mirror material deflection to 1/200, or to the flexure limit of glass, with full recovery of glazing materials, whichever is less.
B. Mirror Glass: ASTM C1036, Type 1 - Transparent Flat, Class 1 - Clear, Quality - Q2 (general use mirrors); silvering, protective coating, and quality requirements in compliance with ASTM C1503.
   1. Thickness: 1/4 inch.
   2. Size: As noted on drawings.

2.03 GLAZING COMPOUNDS
   A. Manufacturers standard glazing compounds.

2.04 ACCESSORIES
   A. Setting Blocks: Neoprene, 80 to 90 Shore A durometer hardness.
   B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness.
   C. Glazing Tape: Preformed butyl compound; 10 to 15 Shore A durometer hardness; on release paper.
   D. Glazing Clips: Manufacturer's standard type.
   E. Mirror Attachment Accessories: Stainless steel clips.
   F. Channel Frame: One piece, channel frame, stainless steel, Type 430, satin finish, 1/2 inch by 1/2 inch by 3/8 inch deep with 90 degree mitered corners.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that openings for mirrored glazing are correctly sized and within tolerance.
   B. Verify that surfaces of mirror frames or recesses are clean, free of obstructions, and ready for installation of mirrors.

3.02 PREPARATION
   A. Clean contact surfaces with solvent and wipe dry.
   B. Seal porous mirror frames or recesses with substrate compatible primer or sealer. Prime surfaces scheduled to receive sealant.
   C. Prepare installation in accordance with ASTM C1193 for solvent release sealants, and install sealant in accordance with manufacturer's instructions.

3.03 INSTALLATION
   A. Install mirrors in accordance with GANA (TIPS) and manufacturers recommendations.
   B. Set mirrors plumb and level, and free of optical distortion.
   C. Set mirrors with edge clearance free of surrounding construction including countertops or backsplashes.
   D. Installation in Frames:
      1. Install mirrors resting on setting blocks. Install applied stop and center mirror by use of spacer shims at 24 inch on center and at 1/4 inch below sight line.
      2. Locate and secure mirror using spring wire clips.
      3. Fill gaps between mirror and stops with glazing compound until flush with sight line, and tool surface to straight flush line.
   E. Frameless Mirrors: Set mirrors with clips, and anchor rigidly to wall construction.

3.04 CLEANING
   A. Remove wet glazing materials from finish surfaces.
   B. Remove labels after work is complete.
   C. Clean mirrors and adjacent surfaces.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES

A. Performance criteria for gypsum board assemblies.
B. Metal stud wall framing.
C. Metal channel ceiling framing.
D. Shaft Wall Assemblies.
E. Exterior sheathing board.
F. Acoustic insulation.
G. Cementitious backing board.
H. Gypsum wallboard.
I. Joint treatment and accessories.
J. Textured finish system.

1.02 RELATED REQUIREMENTS

A. Section 06 1000 - Rough Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCE STANDARDS

A. AISI SG02-1 - North American Specification for the Design of Cold-Formed Steel Structural Members; American Iron and Steel Institute; 2001 with 2004 supplement. (replaced SG-971)
I. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness; 2011.
P. ASTM E413 - Classification for Rating Sound Insulation; 2010.
Q. GA-216 - Application and Finishing of Gypsum Board; Gypsum Association; 2010.

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
C. Product Data: Provide data on metal framing, gypsum board, accessories, and joint finishing system.
D. Product Data: Provide manufacturer’s data on partition head to structure connectors, showing compliance with requirements.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES
A. Provide completed assemblies complying with ASTM C840 and GA-216.
B. Interior Partitions Indicated as Acoustic: Provide completed assemblies with the following characteristics:
   1. Acoustic Attenuation: STC as indicated calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.

2.02 METAL FRAMING MATERIALS
A. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
   1. Studs: "C" shaped with flat or formed webs with knurled faces.
   2. Runners: U shaped, sized to match studs.
   3. Ceiling Channels: C shaped.
B. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
C. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection using slotted holes, screws and anti-friction bushings, preventing rotation of studs while maintaining structural performance of partition.
   1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
D. Shaft Wall Studs and Accessories: ASTM C 645; galvanized sheet steel, of size and properties necessary to comply with ASTM C 754

2.03 BOARD MATERIALS
A. Manufacturers - Gypsum-Based Board:

B. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Use for vertical surfaces and ceilings, unless otherwise indicated.
   2. Thickness:
      c. Multi-Layer Assemblies: Thicknesses as indicated on drawings.

3. Paper-Faced Products:
   a. American Gypsum; EagleRoc Regular Gypsum Wallboard and FireBloc Type X Gypsum Wallboard.
   b. CertainTeed Corporation; ProRoc Brand Gypsum Board.
   e. USG Corporation; Sheetrock Brand Gypsum Panels.
   f. Substitutions: See Section 01 6000 - Product Requirements.

C. Backing Board For Wet Areas: One of the following products:
   1. Application: Surfaces behind tile in wet areas as indicated in the drawings.
   2. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C1325.
      b. Products:
         1) National Gypsum Company; PermaBase Brand Cement Board.
         2) USG Corporation; Durock Brand Cement Board.
         3) Substitutions: See Section 01 6000 - Product Requirements.

D. Ceiling Board: Special sag-resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
   1. Application: Ceilings, unless otherwise indicated.
   2. Thickness: 5/8 inch.
   4. Products:
      a. American Gypsum; Interior Ceiling Board.
      b. CertainTeed Corporation; ProRoc Interior Ceiling.
      c. Georgia-Pacific Gypsum; ToughRock CD Ceiling Board.
      d. National Gypsum Company; High Strength Brand Ceiling Board.
      e. USG Corporation; Sheetrock Brand Sag-Resistant Interior Gypsum Ceiling Board.
      f. Substitutions: See Section 01 6000 - Product Requirements.

E. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
   1. Application: Exterior sheathing, unless otherwise indicated.
   2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
   3. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
   4. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
   5. Core Type: Type X, as indicated.
   6. Type X Thickness: 5/8 inch.
   7. Edges: V-shaped tongue and groove, for horizontal application.
   8. Glass Mat Faced Products:
      a. Georgia-Pacific Gypsum; DensGlass Fireguard Sheathing.
b. Substitutions: See Section 01 6000 - Product Requirements.

2.04 SHAFT WALL ASSEMBLIES

A. General: Provide materials and components complying with requirements of fire-resistance-rated assemblies indicated and in accordance with requirements of applicable codes.

B. Gypsum Shaftwall or Coreboard: ASTM C 1396/C 1396M; Type X core; sizes to minimize joints in place; 1 inch thick; square, tongue and groove, or double beveled edges, ends square cut.

2.05 ACCESSORIES

A. Finishing Accessories: ASTM C1047, galvanized steel or rolled zinc, unless otherwise indicated.
   1. Types: As detailed or required for finished appearance.
   2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.

B. Joint Materials: ASTM C475 and as recommended by gypsum board manufacturer for project conditions.
   1. Tape: 2 inch wide, coated glass fiber tape for joints and corners, except as otherwise indicated.

C. Textured Finish Materials: Latex-based compound; containing fine aggregate.

D. Screws for Attachment to Steel Members Less Than 0.03 inch: ASTM C1002; self-piercing tapping type.

E. Screws: ASTM C1002; self-piercing tapping type.

F. Screws: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

G. Screws for Attachment to Steel Members From 0.033 to 0.112 inch in Thickness: ASTM C954; steel drill screws for application of gypsum board to loadbearing steel studs.

H. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

I. Blocking or Backing: 1-1/2 inch steel channels, unless otherwise shown.

J. Acoustic Accessories: Install acoustic accessories where detailed on the drawings and in accordance with manufacturer instructions.
   1. Acoustic Insulation: ASTM C 665-Type I; pre-formed mineral wool; Thermafiber SAFB 2.5 pcf. as manufactured USG. Thickness indicated on drawings.
   2. Acoustic Sealant: Acoustical Sealant: Non-hardening, non-skinning, for use in conjunction with gypsum board; sealant specified in Section 079005.
   3. Product substitutions for acoustic accessories manufacturers not permitted.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that project conditions are appropriate for work of this section to commence.

3.02 FRAMING INSTALLATION

A. Metal Framing: Install in accordance with ASTM C754 and manufacturer's instructions.

B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
   1. Level ceiling system to a tolerance of 1/1200.
   2. Laterally brace entire suspension system.
   3. Space main carrying channels at maximum 48 inches on center, not more than 6 inches
from perimeter walls. Lap splices minimum 12 inches and secure together 2 inches from each end of splice.

4. Place furring channels perpendicular to carrying channels at maximum 24 inches on center, unless otherwise shown, not more than 2 inches from perimeter walls. Lap splices minimum 8 inches and secure together 1 inch from each end of splice.

5. Reinforce openings in ceiling suspension system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.

C. Studs: Space studs at 16 inches on center.
   1. Extend partition framing to structure where indicated and to ceiling in other locations.
   2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
   3. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.

D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.

E. Standard Wall Furring: Install at concrete walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
   1. Orientation: Horizontal.
   2. Spacing: At 16 inches on center.

F. Blocking: Install wood blocking for support of:
   1. Framed openings.
   2. Wall mounted cabinets.
   3. Plumbing fixtures.
   4. Toilet partitions.
   5. Toilet accessories.
   6. Wall mounted door hardware.
   7. Wall mounted roof access ladder.

3.03 BOARD INSTALLATION

A. Comply with ASTM C 840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.

B. Single-Layer Non-Rated: Install gypsum board parallel to framing, with ends and edges occurring over firm bearing.

C. Double-Layer Non-Rated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Place second layer parallel to framing or furring members. Offset joints of second layer from joints of first layer.

D. Fire-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.

E. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.

F. Cementitious Backing Board: Install over steel framing members and plywood substrate where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.

G. Sound Control Partitions: Where sound isolation devices are shown, install as shown on the Drawings and in accordance with manufacturer’s recommendations.
   1. Stagger all joints on single layer (or base layer) gypsum panels on each side so that joints occur on alternating studs. On doubled layers, stagger joints of face layer by one stud
width from base layer.
2. Where voids greater than 1/4 inch exist at penetrations and terminations, pack with 1.5 pcf fiberglass before sealing.
3. Apply a continuous bead of acoustical sealant along the butt joints of all gypsum board panels where subsequent layers are to be applied to them.
4. On Sound control cavity walls, do not use cross-cavity bracing except as specifically indicated.

H. Exterior Sheathing: Comply with ASTM C1280. Install sheathing horizontally, with edges butted tight and ends occurring over firm bearing.
   1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.

I. Moisture Protection: Treat cut edges and holes in exterior gypsum soffit board with sealant.

### 3.04 INSTALLATION OF TRIM AND ACCESSORIES

A. Control Joints: Place control joints consistent with lines of building spaces and as indicated.
   1. Not more than 30 feet apart on walls and ceilings over 50 feet long.
   2. Install at one jamb of all single leaf doors and at both jambs of pairs of doors.
   3. Architect reserves the right to additional control joints to maintain aesthetic appearance of work.

B. Corner Beads: Install at external corners, using longest practical lengths.

C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials and as indicated.

### 3.05 ACOUSTIC ACCESSORIES INSTALLATION

A. Place acoustical sealant within partitions in accordance with manufacturer’s recommendations and as shown on the Drawings. Install sealant at perimeter of wallboard: at sound control partitions, including perimeter of all openings and penetrations.
   1. For double layer applications, hold the face layer of the gypsum board 1/4” off the floor and other intersections to allow application of a continuous bead of acoustical sealant in the gap. Apply the sealant to the outer layer to allow inspection in the field prior to taping and before the installation of flooring, base, or trim.
   2. Use fire-resistive sealant, placed as specified above, in lieu of acoustical sealant at fire-rated sound control partitions; reference Section 07840.

B. Place sound attenuation blankets in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items, and tight to items passing through partitions.

C. Surfaces to receive acoustical sealant shall be clean, dry, and dust-free. Before sealing gypsum board construction, blow gypsum dust out from gaps at the perimeter where acoustical sealant will be applied.

D. Seal all penetrations through sound control partitions airtight with resilient materials and acoustical sealant as shown.

### 3.06 PENETRATIONS AT ACOUSTICAL PARTITIONS AND CEILINGS

A. All penetrations must be carefully sealed to maintain the acoustical integrity of the partitions. Minimize the number and size of penetrations in walls between sound critical spaces. Where possible, locate them in walls adjacent to non-critical rooms.

B. Seal penetrations airtight using resilient V materials which will prevent rigid contact between the penetrating element and the partition. Provide sleeved or cased openings on all sides of the penetration so that the penetrating element is not supported by the partition.

C. Do not penetrate sound critical walls with wiring trough, cable raceways, or interconnect boxes except as detailed.
3.07 INSTALLATION--ELECTRICAL BOXES AT ACOUSTICAL PARTITIONS

A. Where electrical boxes are located on walls to be finished with acoustical treatment, surface mount the boxes to be flush with the finished surface without using extenders or special adapters. Provide blocking behind electrical boxes as required to bring boxes flush with finished surface.

B. Where recessed electrical boxes occur, adhere to the following:
   1. Do not install back to back electrical boxes in any of the critical walls; separate the boxes by at least one stud spacing.
   2. Install Acoustical Outlet Backer Putty Pad IsoBacker as recommended by manufacturer.

3.08 JOINT TREATMENT

A. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
   1. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
   2. Level 1: Fire rated wall areas above finished ceilings, whether or not accessible in the completed construction.

B. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
   1. Feather coats of joint compound so that camber is maximum 1/32 inch.
   2. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile and fixed cabinetry.

C. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.09 TEXTURE FINISH

A. Apply finish texture coating by means of spraying apparatus in accordance with manufacturer's instructions and to match approved sample.

3.10 SHAFT WALL INSTALLATION

A. Shaft Wall Framing: Comply with manufacturers instructions. Provide fire ratings to meet requirements of applicable codes.
   1. Fasten runners to structure with short leg to finished side, using appropriate power-driven fasteners at not more than 24 inches on center.
   2. Install studs at spacing required to meet performance requirements.

B. Shaft Wall Liner: Cut panels to accurate dimension and install sequentially between special friction studs
   1. On walls over sixteen feet high, screw-attach studs to runners top and bottom.
   2. Seal perimeter of shaft wall and penetrations with acoustical sealant.

3.11 TOLERANCES

A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal lath for portland cement plaster.
B. Furring for metal lath.
C. Metal ceiling framing.

1.02 RELATED REQUIREMENTS

A. Section 08 3100 - Access Doors and Panels: Product requirements for metal access panels integral with metal lath.
B. Section 09 2400 - Portland Cement Plastering.

1.03 REFERENCE STANDARDS

B. ASTM C 1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs; current edition.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on furring and lathing components, structural characteristics, material limitations, and finish.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years experience.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Metal Lath:
   6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FRAMING AND LATH ASSEMBLIES

A. Provide completed assemblies with the following characteristics:
   1. Maximum Deflection of Vertical Assemblies: 1:360 under lateral point load of 100 lbs.
B. Fire Rated Assemblies: Provide components complying with requirements for fire rated assemblies specified in the section where the plaster finish is specified.
2.03 FRAMING MATERIALS

A. Furring Channels: Formed steel, minimum 0.020 inch thick, 3/8 inch deep x 7/8 inch high, splicing permitted; galvanized.

B. Main Ceiling Channels: Formed steel, asphalt coated, minimum 0.05 inch thick, 3/4 inch deep x 1-1/2 inch high, single piece, no splicing; galvanized.

C. Hangers: Steel wire, of size and type to suit application, to support ceiling components in place to deflection limits as indicated.

D. Ceiling Hangers for Exterior Locations: Rolled steel sections, of size and type to suit application, to rigidly support ceiling components in place to deflection limits as indicated; galvanized.

E. Lateral Bracing: Formed steel, minimum 0.060 inch thick, size and length as required; galvanized.

2.04 LATH

   1. Weight: To suit application, comply with deflection criteria, and as specified in ASTM C 841 for framing spacing.
   2. Weight: 2.5 lb/sq yd.
   3. Backed with treated paper.

B. Corner Mesh: Formed sheet steel, minimum 0.018 inch thick, perforated flanges shaped to permit complete embedding in plaster, minimum 2 inch size; same finish as lath.

C. Strip Mesh: Expanded metal lath, same weight as lath, 2 inch wide x 24 inch long; same finish as lath.

D. Beads, Screeds, Joint Accessories, and Other Trim: Depth governed by plaster thickness, maximum possible lengths.
   1. Material: Formed sheet steel with rust inhibitive primer, expanded metal flanges.

2.05 ACCESSORIES

A. Access Panels: As specified in Section 08 3100.

B. Anchorage: Tie wire, nails, and other metal supports, of type and size to suit application; to rigidly secure materials in place, galvanized.

C. Fasteners: ASTM C 1002 self-piercing tapping screws.

D. Polyethylene Sheet: Clear, 6 mil thick.

E. Tie Wire: Annealed galvanized steel.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that substrates are ready to receive work and conditions are suitable for application.

C. For exterior plaster and stucco on stud walls, verify that water-resistive barrier has been installed over sheathing substrate completely and correctly.

D. Do not begin until unacceptable conditions have been corrected.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
3.02 INSTALLATION - GENERAL
   A. Install interior lath and furring in accordance with ASTM C 841.
   B. Install lath and furring for fire-rated assemblies in accordance with the requirements of the indicated assembly.

3.03 WALL FURRING
   A. Install furring channels horizontally; secure with fasteners on alternate channel flanges at maximum 24 inches on center.
   B. Space furring channels maximum 16 inches on center, and not more than 4 inches away from floor and ceiling lines.

3.04 CEILING AND SOFFIT FRAMING
   A. Install furring after work above ceiling or soffit is complete. Coordinate the location of hangers with other work.
   B. Install furring independent of walls, columns, and above-ceiling work.
   C. Securely anchor hangers to structural members or embed in structural slab. Space hangers as required to limit deflection to criteria indicated. Use rigid hangers at exterior soffits.
   D. Space main carrying channels at maximum 72 inch on center, and not more than 6 inches from wall surfaces. Lap splice securely.
   E. Securely fix carrying channels to hangers to prevent turning or twisting and to transmit full load to hangers.
   F. Place furring channels perpendicular to carrying channels, not more than 2 inches from perimeter walls, and rigidly secure. Lap splices securely.
   G. Reinforce openings in suspension system that interrupt main carrying channels or furring channels with lateral channel bracing. Extend bracing minimum 24 inches past each opening.
   H. Laterally brace suspension system.

3.05 CONTROL AND EXPANSION JOINTS
   A. Control Joint Spacing: Maximum 12 feet on center.
   B. Expansion Joint Spacing: Install where existing building expansion joints occur.
   C. Construct control joints of back-to-back casing beads set 1/4 inch apart. Set both beads over 6 inch wide strip of polyethylene sheet.
   D. Construct expansion joints of back-to-back casing beads set 1/2 inch apart.

3.06 ACCESS PANELS
   A. Install access panels and rigidly secure in place.
   B. Install frames plumb and level in opening. Secure rigidly in place.
   C. Position to provide convenient access to concealed work requiring access.

3.07 LATH INSTALLATION
   A. Apply metal lath taut, with long dimension perpendicular to supports.
   B. Lap ends minimum 1 inch. Secure end laps with tie wire where they occur between supports.
   C. Lap sides of diamond mesh lath minimum 1-1/2 inches.
D. Attach metal lath to metal supports using tie wire at maximum 6 inches on center.

E. Continuously reinforce internal angles with corner mesh, except where the metal lath returns 3 inches from corner to form the angle reinforcement; fasten at perimeter edges only.

F. Place corner bead at external wall corners; fasten at outer edges of lath only.

G. Place base screeds at termination of plaster areas; secure rigidly in place.

H. Place 4 inch wide strips of metal lath centered over junctions of dissimilar backing materials. Secure rigidly in place.

I. Place lath vertically above each top corner and each side of door frames to 6 inches above ceiling line.

J. Place casing beads at terminations of plaster finish. Butt and align ends. Secure rigidly in place.

K. Place additional strip mesh diagonally at corners of lathed openings. Secure rigidly in place.

3.08 TOLERANCES

A. Maximum Variation from True Lines and Levels: 1/8 inch in 10 feet.

B. Maximum Variation from True Position: 1/8 inch.

END OF SECTION
SECTION 09 2400
PORTLAND CEMENT PLASTER

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Section includes portland cement plaster system over metal lath.

1.02 REFERENCES
A. ASTM C 150 - Portland Cement.
B. ASTM C 206 - Finishing Hydrated Lime.
D. ASTM C 926 - Application of Portland Cement-Based Plaster.
E. ASTM C 979 - Pigments for Integrally Colored Concrete.

1.03 PERFORMANCE REQUIREMENTS
A. Fabricate horizontal elements to limit finish surface to 1:360 deflection under superimposed dead load and wind uplift loads.

1.04 SUBMITTALS
A. See Sections 01 3000 - Administrative Requirements for submittal requirements.
   1. Product data sheet or MSDS indicating VOC emissions in grams/Liter (g/L). Provide referenced standard VOC limit for products applied within building envelope.
C. Samples: Submit two samples, 12 inches by 12 inches in size illustrating finish color and texture.

1.05 QUALITY ASSURANCE
B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
C. Installer Qualifications: Company specializing in performing Work of this section with minimum three years documented experience.

1.06 PRE-INSTALLATION MEETING
A. Convene minimum one week prior to commencing Work of this section.

1.07 ENVIRONMENTAL REQUIREMENTS
A. Exterior Plaster Work: Do not apply cement plaster when ambient temperature is less than 40 degrees F.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT PLASTER
A. Manufacturers:
   1. Holnam, Inc.
   2. The Quikrete Companies.
3. United States Gypsum Co.
5. Substitutions: Section 01 6000 – Product Requirements.

2.02 COMPONENTS:

   2. Lime: ASTM C 206, Type S.
   4. Water: Clean, fresh, potable and free of mineral or organic matter which can affect plaster.

B. Metal Lath and Accessories: Specified in Section 09 22 36.23.

2.03 MIXES

A. Base Coats: Mix and proportion cement plaster basecoat in accordance with PCA Portland Cement Plaster (Stucco) Manual. Add glass fibers to basecoats at a rate of 94 pounds per sack of cement.

B. Finish Coat: Mix and proportion cement plaster finish coat in accordance with PCA Portland Cement Plaster (Stucco) Manual and manufacturer's instructions.

C. Mix only as much plaster as can be used prior to initial set.

D. Mix materials dry, to uniform color and consistency, before adding water.

E. Protect mixtures from freezing, frost, contamination, and excessive evaporation.

F. Do not re-temper mixes after initial set has occurred.

G. Provide material with maximum amount of recycled content available that achieves performance requirements of this Section,

H. Provide material with maximum amount of regional (within 500 miles) material feasible that achieves performance requirements of this Section,

I. Comply w/ Division 1 IAQ Management Plan

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify the suitability of existing conditions before starting work.

B. Metal Lath and Accessories: Verify lath is flat, secured to substrate, and joint and surface perimeter accessories are in place.

C. Masonry: Verify joints are cut flush and surface is ready to receive work of this section. Verify no bituminous or water repellent coatings exist on masonry surface.

D. Mechanical and Electrical: Verify services within walls have been tested and approved.

3.02 INSTALLATION

A. Plastering:
   1. Apply plaster in accordance with ASTM C 926 and PCA Plaster (Stucco) Manual.

B. Three-Coat Application Over Metal Lath:
   1. Apply first coat to a nominal thickness of 3/8 inch.
   2. Apply second coat to a nominal thickness of 3/8 inch.
   3. Apply finish coat to a nominal thickness of 1/8 inch.

C. Three-Coat Application Over Solid Bases:
1. Apply first coat to a nominal thickness of 1/4 inch.
2. Apply second coat to a nominal thickness of 1/4 inch.
3. Apply finish coat to a nominal thickness of 1/8 inch.

D. Moist cure base and brown coats. Apply brown coat immediately following initial set of scratch coat.

E. After curing, dampen previous coat prior to applying finish coat.

F. Apply finish coat to indicated color and texture to fine sand float texture with selected color in accordance with PCA Portland Cement Plaster (Stucco) Manual.

G. Avoid excessive working of surface. Delay troweling as long as possible to avoid drawing excess fines to surface.

H. Moist cure finish coat for minimum period of 48 hours.

3.03 ERECTION TOLERANCES

A. Maximum Variation from True Flatness: 1/8-inch in 10 feet.

3.04 ADJUSTING

A. Remove damaged or defective plaster by cutting and replace with specified materials to match adjacent plaster.

B. Fog coat non-uniform or discolored plaster with finish coat materials spray applied to entire finish coat surface.

END OF SECTION
SECTION 09 3000

TILE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Tile for floor applications.
B. Tile for wall applications.
C. Waterproofing Membrane
D. Cement-based board as tile substrate.
E. Stone thresholds.

1.02 RELATED SECTIONS

A. Section 07 9005 - Joint Sealers.
B. Section 09 2116 - Gypsum Board Assemblies: Installation of tile backer board.

1.03 REFERENCES

17. UNI EN ISO 10545.2 (dimensional tolerance)
18. UNI EN ISO 10545.3 (water absorption)
19. UNI EN ISO 10545.4 (bending strength)
20. UNI EN ISO 10545.6 (resistance to deep abrasion)
21. UNI EN ISO 10545.8 (thermal expansion coefficient)
22. UNI EN ISO 10545.9 (thermal shock resistance)
23. UNI EN ISO 10545.13 (chemical resistance)
24. UNI EN ISO 10545.12 (frost resistance)
25. UNI EN ISO 10545.14 (stain resistance)


1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
C. Shop Drawings: Indicate tile layout, patterns, color arrangement, perimeter conditions, junctions with dissimilar materials, control and expansion joints, thresholds, ceramic accessories, and setting details.
D. Maintenance Data: Include recommended cleaning methods, cleaning materials, stain removal methods, and polishes and waxes.

1.05 QUALITY ASSURANCE
A. Maintain one copy of TCA Handbook and ANSI A108 Series/A118 Series on site.
B. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum 5 years of documented experience.
C. Installer Qualifications: Company specializing in performing tile installation, with minimum of 5 years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING
A. Protect adhesives from freezing or overheating in accordance with manufacturer's instructions.

1.07 ENVIRONMENTAL REQUIREMENTS
A. Do not install adhesives in an unventilated environment.
B. Maintain ambient and substrate temperature of 50 degrees F during installation of mortar materials.

1.08 EXTRA MATERIALS
A. Provide 3 percent of the quantity installed for each size, profile, color, and surface finish of tile specified.

PART 2 PRODUCTS
2.01 CERAMIC, PORCELAIN AND QUARRY TILE
A. Acceptable Manufacturers: Drawings and specifications are based on manufacturer's literature from the manufacturers listed on the drawings. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01 6000 – Product Requirements.
1. Substitutions: See Section 01 6000 - Product Requirements.
2.02 TRIM AND ACCESSORIES

A. Tile Trim: Matching bullnose, double bullnose, in sizes indicated on finish schedule and on drawings.
   1. Applications: Use in the following locations:
      a. Open Edges: Bullnose.
      b. Inside Corners: Jointed.
      c. Base: Use standard non-coved wall tile as base.
      d. Install tile base with joints in line with adjacent floor tile where possible.
   2. Manufacturer: Same as for tile.

B. Thresholds: Marble, honed finish; 2 inches wide by full width of wall or frame opening; 1/2 inch thick thick; beveled to meet handicapped access requirements; without holes, cracks, or open seams.
   1. Applications: Provide at the following locations:
      a. At doorways where tile terminates.
      b. At open edges of floor tile where adjacent finish is a different height.
      c. Color to be selected from full range of colors available (minimum 6 options).

2.03 MORTAR MATERIALS

A. Manufacturers:
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Mortar Bed Materials: Portland cement, sand, latex additive and water.

C. Mortar Bond Coat Materials:
   2. Latex-Portland Cement type: ANSI A118.4.

2.04 GROUT MATERIALS

A. Manufacturers:
   4. Substitutions: See Section 01 6000 - Product Requirements.

B. Standard Grout: Polymer modified cement grout, sanded or unsanded, as specified in ANSI A118.7.
   2. Seal all grout; apply per manufacturer recommendations

2.05 ACCESSORY MATERIALS

A. ANSI Cement-Based Board: Non-gypsum-based; aggregated Portland cement panels with glass fiber mesh embedded in front and back surfaces complying with ANSI A118.9 or ASTM C 1325. Use behind wall tile in wet areas.
   1. Thickness: 1/2 inch.
   2. Products:
      a. Custom Building Products; Wonderboard.
      b. National Gypsum Company; PermaBase Brand Cement Board.
      c. USG Corporation; Durock Brand Cement Board.
      d. Substitutions: Section 01 6000 – Product Requirements.

PART 3 EXECUTION

MWSU MASS COMM BUILDING 09 3000 - 3 TILING
REES Project #21503.00
3.01 EXAMINATION
   A. Verify that sub-floor surfaces are smooth and flat within tolerances specified in Section 03 30 00 and are ready to receive tile.
   B. Verify that wall surfaces are smooth and flat within tolerances specified in Section 09 21 16, are dust-free, and are ready to receive tile.
   C. Verify that sub-floor surfaces are dust-free, and free of substances which would impair bonding of setting materials to sub-floor surfaces.
   D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION
   A. Protect surrounding work from damage.
   B. Vacuum clean surfaces and damp clean.
   C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
   D. Install cementitious backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of dry-set mortar to a feather edge. Cementitious backer board specified in Section 09260.
   E. Prepare substrate surfaces for adhesive installation in accordance with adhesive manufacturer's instructions.

3.03 INSTALLATION - GENERAL
   A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.
   B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
   C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
   D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make joints watertight, without voids, cracks, excess mortar, or excess grout.
   E. Form internal angles square and external angles bullnosed.
   F. Install thresholds where indicated.
   G. Sound tile after setting. Replace hollow sounding units.
   H. Keep expansion joints free of adhesive or grout. Apply sealant to joints.
   I. Allow tile to set for a minimum of 48 hours prior to grouting.
   J. Grout tile joints. Use standard grout unless otherwise indicated.
   K. Apply sealant to junction of tile and dissimilar materials and junction of dissimilar planes.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS
   A. Over interior concrete substrates, install in accordance with tile manufacturer's written installation instructions.

3.05 INSTALLATION - WALL TILE
   A. Over cementitious backer units on studs, install in accordance with TCA Handbook Method W244, using membrane at toilet rooms.
B. Over interior concrete and masonry install in accordance with TCA Handbook Method W202, thin-set with dry-set or latex-portland cement bond coat.

3.06 CLEANING
A. Clean tile and grout surfaces.

3.07 PROTECTION OF FINISHED WORK
A. Do not permit traffic over finished floor surface for 4 days after installation.

END OF SECTION
SECTION 09 5100
ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES
A. Suspended metal grid ceiling system.
B. Acoustical units.

1.02 REFERENCE STANDARDS

1.03 ADMINISTRATIVE REQUIREMENTS
A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
B. Do not install acoustical units until after interior wet work is dry.

1.04 SUBMITTALS
A. See Section 01 3000 – Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on suspension system components.
C. Manufacturer's Installation Instructions: Indicate special procedures.

1.05 QUALITY ASSURANCE
A. Fire-Resistive Assemblies: Complete assembly listed and classified by UL for the fire resistance indicated.

1.06 FIELD CONDITIONS
A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

1.07 MAINTENANCE MATERIALS
A. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. Ceiling tile: Quantity equal to 10 percent of total installed of each type installed.

PART 2 - PRODUCTS

2.01 ACOUSTICAL UNITS
A. Drawings and specifications are based on manufacturer's literature from the manufacturer(s) listed on the drawings Finish Schedules. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in the specifications and in conformance with provisions of Section 01 6000 – Product Requirements.
B. Acoustical Units
   1. Refer to drawings ‘Finish Legend’ for specific product selections.
   2. Units for Installation in Fire-Rated Suspension System: Listed and classified for the resistive assembly the suspension system is a part of.

2.02 SUSPENSION SYSTEM(S)
A. Acceptable Manufacturers:
   1. Provide suspension system from the same manufacturer as for acoustical units.
   2. Substitutions: Not permitted.
B. Suspension Systems - General: ASTM C 635; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
   1. Refer to drawings ‘Finish Legend’ for specific product selections.

PART 3 - EXECUTION

3.01 EXAMINATION
   A. Verify existing conditions before starting work.
   B. Verify that layout of hangers will not interfere with other work.

3.02 INSTALLATION - SUSPENSION SYSTEM
   A. Install suspension system in accordance with manufacturer's instructions and as supplemented in this section.
   B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
   C. Locate system according to reflected plan shown on the drawings.
   D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
   E. Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
   F. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
   G. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
   H. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
   I. Do not eccentrically load system or induce rotation of runners.
   J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
      1. Use longest practical lengths.
      2. Miter corners.
   K. Install light fixture boxes constructed of gypsum board above light fixtures in accordance with fire rated assembly requirements and light fixture ventilation requirements.

3.03 INSTALLATION - ACOUSTICAL UNITS
   A. Install acoustical units in accordance with manufacturer's instructions.
   B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
   C. Fit border trim neatly against abutting surfaces.
   D. Install units after above-ceiling work is complete.
   E. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
   F. Cutting Acoustical Units:
      1. Cut to fit irregular grid and perimeter edge trim.
      2. Make field cut edges of same profile as factory edges.
      3. Double cut and field paint exposed reveal edges.
   G. Where round obstructions occur, provide preformed closures to match perimeter molding.
   H. Install hold-down clips on each panel to retain panels tight to grid system; comply with fire rating requirements.
   I. Install hold-down clips on panels within 20 ft of an exterior door.
3.04 TOLERANCES

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
A. Laminated wood flooring.
B. Installation accessories.

1.02 RELATED REQUIREMENTS
A. Section 06 1000 - Rough Carpentry: Wood subfloor surface.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, wood species and colors available; and installation instructions.
C. Shop Drawings: Indicate floor joint pattern and termination details.
D. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Flooring Material: 10 square yards matching installed flooring.

1.05 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years documented experience.
B. Installer Qualifications: Company specializing in performing the type of work specified in this section.
   1. Minimum three years of documented experience.

1.06 FIELD CONDITIONS
A. Do not install wood flooring until wet construction work is complete and ambient air at installation space has moisture content stabilized at maximum moisture content of 40 percent.
B. Provide heat, light, and ventilation prior to installation.
C. Store materials in area of installation for minimum period of 24 hours prior to installation.
D. Maintain minimum room temperature of 65 degrees F and relative humidity in accordance with adhesive manufacturer's instructions for a minimum period of 48 hours prior to delivery of materials to installation space, during installation, and after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Drawings and specifications are based on manufacturer's literature from Shaw Contract Group unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01 6000 – Product Requirements.
   1. Substitutions permitted under provisions of Section 01 600 – Product Requirements.

2.02 MATERIALS
A. Laminated Wood Flooring: Refer to drawing Finish Schedule for product selection.
   1. Substitutions permitted under provisions of Section 01 600 – Product Requirements.
2.03 ACCESSORIES
   A. Subfloor Filler: White premix latex. Type recommended by adhesive material manufacturer.
   B. Adhesives: Water-resistant; types recommended by flooring manufacturer for project substrates.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify that sub-floor surfaces are smooth and flat within the tolerances required for type of substrate and ready to receive laminated wood flooring.
   B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of materials to substrate surface.
   C. Verify that concrete sub-floor surfaces are ready for wood flooring installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are outside the limits recommended by adhesive materials manufacturer.

3.02 PREPARATION
   A. Prepare sub-floor in accordance with flooring manufacturer's installation instructions.
   B. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.
   C. Prohibit traffic until filler is fully cured.
   D. Vacuum clean substrate.

3.03 INSTALLATION
   A. Wood Flooring:
      1. Install flooring in accordance with manufacturer's installation instructions.
      2. Lay flooring parallel to length of room areas. Verify alignment as work progresses.
      3. Terminate flooring at centerline of door openings where adjacent floor finish is dissimilar; provide divider strips and transition strips in accordance with flooring manufacturer's recommendations and as indicated.
      4. Install edge strips at unprotected or exposed edges, and where flooring terminates.
      5. Within two (2) hours of adhesive applied flooring installation, roll work thoroughly in both directions with 100 lb roller.

3.04 CLEANING
   A. Remove excess adhesive from floor, base, and wall surfaces without damaging surfaces.
   B. Clean floor surfaces in accordance with the flooring manufacturer's instructions.

3.05 PROTECTION
   A. Prohibit traffic on finished floor for 24 hours after installation.
   B. Place protective coverings over finished floors; do not remove coverings until after Date of Substantial Completion.

END OF SECTION
SECTION 09 6500
RESILIENT FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Resilient tile flooring.
   B. Resilient base.
   C. Resilient stair accessories.
   D. Installation accessories.

1.02 REFERENCES

1.03 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
   C. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

1.04 ENVIRONMENTAL REQUIREMENTS
   A. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
   B. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

1.05 EXTRA MATERIALS
   A. See Section 01 6000 - Product Requirements, for additional provisions.
   B. Provide 50 sq ft of flooring, 100 lineal feet of base, of each type and color specified.

PART 2 PRODUCTS

2.01 MATERIALS - TILE FLOORING
   A. Drawings and specifications are based on manufacturer's literature from Armstrong World Industries unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01 60 00 – Product Requirements.
   B. Resilient Flooring:
      1. Acceptable Product: As indicated in drawing finish schedules.
      2. Thickness: As indicated in drawing finish schedules.
      3. Color: As indicated in drawing finish schedules.
      4. Installation pattern: As indicated in drawing finish schedules.
      5. Substitutions: See Section 01 6000 - Product Requirements.
B. Feature Strips: Of same material as tile.

2.02 MATERIALS - BASE

A. Drawings and specifications are based on manufacturer’s literature from Armstrong World Industries unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01600 – Product Requirements.

A. Resilient Base: ASTM F 1861, Type TS rubber, vulcanized thermoset; top set, style as indicated on the drawings, and as follows:
   1. Acceptable Product: As indicated in drawing finish schedules.
   2. Height: As indicated in drawing finish schedules.
   3. Thickness: As indicated in drawing finish schedules.
   5. Length: Roll.
   6. Preformed corners and end pieces are not allowed.
   7. Color: As indicated in drawing finish schedules.

B. Substitutions: See Section 01 6000 - Product Requirements.

2.03 TILE Accessories

A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.

B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

C. Moldings and Edge Strips: Metal.

D. Filler for Coved Base: Plastic.

E. Sealer and Wax: Types recommended by flooring manufacturer.

2.04 STAIR COVERING

A. Stair Treads: Rubber; full width and depth of stair tread in one piece; tapered thickness; nosing not less than 1-5/8 inch deep.
   1. Nominal Thickness: 0.1875 inch.
   3. Style: Ribbed, diamond grid, or raised profile.
   5. Manufacturers: Basis of Design is as indicated on the drawings Finish Schedules.
      a. Substitutions: See Section 01 6000 - Product Requirements.

B. Stair Stringers: Full height in one piece and in maximum available lengths, matching treads in material and color:
   1. Thickness: 0.080 inch.
   3. Manufacturers: Basis of Design is as indicated on the drawings Finish Schedules.
      a. Substitutions: See Section 01 6000 - Product Requirements.

C. Stair Nosings: 1-1/2 inch horizontal return, 1-1/8 inch vertical return, full width of stair tread in one piece:
   1. Material: Rubber.
   2. Nominal Thickness: 0.125 inch.
   5. Manufacturers: Basis of Design is as indicated on the drawings Finish Schedules.
      a. Substitutions: See Section 01 6000 - Product Requirements.
PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive resilient flooring.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.

C. Verify that sub-floor surfaces are dust-free and free of substances which would impair bonding of adhesive materials to sub-floor surfaces.

D. Verify that concrete sub-floor surfaces are ready for resilient flooring installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within the following limits:
   1. Moisture emission rate: Not greater than 3 lb per 1000 sq ft per 24 hours when tested using calcium chloride moisture test kit for 72 hours.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor low spots, cracks, joints, holes, and other defects with sub-floor filler to achieve smooth, flat, hard surface.

B. Prohibit traffic until filler is cured.

C. Clean substrate.

D. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - TILE FLOORING

A. Install in accordance with manufacturer's instructions.

B. Mix tile from container to ensure shade variations are consistent when tile is placed.

C. Spread only enough adhesive to permit installation of materials before initial set.

D. Set flooring in place, press with heavy roller to attain full adhesion.

E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.

F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.

G. Install feature strips and floor markings where indicated. Fit joints tightly.

3.04 INSTALLATION - BASE

A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.

B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.

C. Install base on solid backing. Bond tightly to wall and floor surfaces.

D. Scribe and fit to door frames and other interruptions.
3.05 INSTALLATION - STAIR COVERINGS
   A. Install stair coverings in one piece for full width and depth of tread.
   B. Install stringers configured tightly to stair profile.
   C. Adhere over entire surface. Fit accurately and securely.

3.06 CLEANING
   A. Remove excess adhesive from floor, base, and wall surfaces without damage.
   B. Clean, seal, and wax resilient flooring products in accordance with manufacturer's instructions.

3.07 PROTECTION OF FINISHED WORK
   A. Prohibit traffic on resilient flooring for 48 hours after installation.

END OF SECTION
SECTION 09 6813

TILE CARPETING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Carpet tile, fully adhered.

1.02 RELATED SECTIONS

A. Section 09 6500 - Resilient Flooring: Wall base finish.

1.03 REFERENCES


1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Shop Drawings: Indicate layout of joints, direction of carpet pile, and location of edge moldings.
C. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
D. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
E. Submit two, 12 inch long samples of edge strip.
F. Manufacturer's Installation Instructions: Indicate special procedures.
G. Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning.
H. Provide LEED documentation for recycled content, regional materials, renewable materials.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum five years documented experience.
B. Installer Qualifications: Company specializing in installing carpet with minimum five years experience.
C. Do not install carpet tile while dust born Work is in progress, such as drywall finishing and woodwork finishing.
D. Protect carpet tile with rigid material along construction paths or as directed by Owner.
E. Provide manufacturer field report indicating construction and installation ensure warranty compliance. Reports should note installation periods beginning from day one installation of carpet, storage of materials and protection during construction.

1.06 ENVIRONMENTAL REQUIREMENTS

A. Store materials in area of installation for minimum period of 24 hours prior to installation.

1.07 EXTRA MATERIALS

A. See Section 01 6000 - Product Requirements, for additional provisions.
B. Provide 100 of carpet tiles of each color and pattern selected in unopened boxes.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. Drawings and specifications are based on manufacturer's literature from the manufacturer(s) listed on the drawings Finish Schedules. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in the specifications and in conformance with provisions of Section 01 6000 – Product Requirements.

2.02 CARPET

A. Carpet products are indicated by specific manufacturer and product. Physical characteristics of individual products are omitted in this section. Physical characteristics are available from the named manufacturer and establish the standard of quality for each product selection. Substitute manufacturers are to comply with those levels of material physical characteristics.

B. Acceptable Carpet:

1. Specific carpet selections are indicated on the finish schedules on the drawings.

2.03 ACCESSORIES

A. Sub-Floor Filler: White premix latex; type recommended by flooring material manufacturer.

B. Edge Strips: Roppe manufacturer; Rubber, architect selected color.

C. Adhesives: Acceptable to carpet manufacturers, compatible with materials being adhered; CRI Green Label certified; in lieu of labeled product, independent test report showing compliance is acceptable.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that sub-floor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.

B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive carpet tile.

C. Verify that sub-floor surfaces are dust-free and free of substances which would impair bonding of adhesive materials to sub-floor surfaces.

D. Verify that concrete sub-floor surfaces are ready for carpet tile installation by testing for moisture emission rate and alkalinity; obtain instructions if test results are not within limits recommended by carpet tile manufacturer and adhesive materials manufacturer.

E. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes, and other defects with sub-floor filler.

B. Apply, trowel, and float filler to achieve smooth, flat, hard surface. Prohibit traffic until filler is cured.

C. Vacuum clean substrate.

3.03 INSTALLATION

A. Install carpet tile in accordance with manufacturer's instructions and CRI 104.

B. Blend carpet from different cartons to ensure minimal variation in color match.
C. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
D. Lay carpet tile in square pattern, with pile direction parallel to next unit, set parallel to building lines.
E. Fully adhere carpet tile to substrate.
F. Trim carpet tile neatly at walls and around interruptions.
G. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING
A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
B. Clean and vacuum carpet surfaces.

END OF SECTION
PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Section includes Black Glass Fiber Sound Insulation and accessory items.

1.02 RELATED SECTIONS

A. 06 1000 - Rough Carpentry
B. 06 2000 - Finish Carpentry
C. 09 2116 - Gypsum Wall Board Assemblies

1.03 SYSTEM DESCRIPTION SUMMARY

A. General Description: Product shall provide exceptional sound-absorbing properties, as required. The lightweight products shall be easily handled. The system shall be easily and quickly installable.
B. Damage Resistance: Product shall provide tough surfaces to resist damage during typical handling and job-site installation. If necessary, the coated or faced surfaces may be cleaned by vacuuming.
C. Recycled Product: Product shall contain a minimum of 25% recycled glass.
D. Acoustic Requirements: Reverberation of sound within rooms or areas shall be controlled and sound transmission between shall be noticeably reduced.

1.04 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM E84: Fire Hazard Classification

1.05 SUBMITTALS

A. Submit in strict accordance with Section 01 3000- Administrative Requirements.
B. Design Data: Submit complete, exact and specific design data for exact products specified.
C. Product Data:
   1. Submit manufacturer's specifications to evidence strict compliance with these specifications.
   2. Submit manufacturer's installation instructions.
   3. Manufacturer's Product Data shall be clearly and specifically marked to indicate the specific models or types intended for submittals and desired approval.
   4. Product Data which is unmarked or unclear as to strict intended submittal will be returned unreviewed to submitter.
   5. Submit certification that product contains no asbestos.
D. Samples: Submit two (2) 12” x 12” samples of thickness specified.
E. Quality Control Submittals: Submit to evidence exact compliance with the specified requirements for Design Data, Test Reports, Certificates, Manufacturer's Instructions and Manufacturer's Field Reports.

F. Contract Closeout Submittals:
   1. Project Record Documents: Submit in exact accordance with Section 01780 - Closeout Submittals.
   2. Operation and Maintenance Data: Submit in exact accordance with Section 01780 - Closeout Submittals.
   3. Warranties and Bonds: Submit in exact accordance with Section 01780 - Closeout Submittals.

1.06 QUALITY ASSURANCE

A. Manufacturer Qualifications:
   1. All products covered under this Section shall be produced by a single manufacturer unless otherwise specified.
   2. Manufacturer shall submit evidence of having not less than five (5) years successful production of this product.

B. Subcontractor Qualifications:
   1. Subcontractor shall submit evidence of skill and not less than five (5) years specialized experience with this product.
   2. Subcontractor shall be approved in writing, by the manufacturer.

1.07 DELIVERY, STORAGE AND HANDLING

A. Refer to Section 01 6000 - Product Requirements.

B. Deliver, store and handle products in strict accordance with the manufacturer's latest published requirements and specifications.

1.08 PROJECT/SITE CONDITIONS

A. Environmental Requirements: Per manufacturer's latest published specifications for temperature (interior) weather (exterior), rain, wind, temperature, humidity, ventilation and illumination

B. Existing Conditions: Per manufacturer's latest published specifications.

C. Do not expose product to weather during shipping, storage and installation. Check applicable building codes for limitations of use.

1.09 WARRANTY

A. Refer to and conform to requirements in Section 01 7800 - Closeout Submittals.

PART 2 PRODUCTS

2.01 ACCEPTABLE PRODUCT/MATERIAL MANUFACTURERS

A. Drawings and specifications are based on manufacturer's literature from Owens Corning unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01600 - Product Requirements.

B. Acceptable Manufacturers
   1. CertainTeed; ToughGard T Textile Duct Liner; www.certainteed.com
   2. Knauf; ECOSE; www.knauffiberglass.com
   3. Johns Manville; Linacoustic RC; www.jm.com
   4. Owens Corning; SelectSound Black Acoustic Board; www.owenscorning.com

C. Substitutions: Refer to Section 01 6000 for substitution provisions.
2.02 PRODUCT/MATERIAL SOURCE - BASIS OF DESIGN
   A. Product Manufacturer: Owens Corning, SelectSound Black Acoustic Board.
   B. Substitutions: Refer to Section 01 6000 for substitution provisions.

2.03 MATERIALS
   A. Black (full thickness) glass fiber ductliner; 2 inch thick, mat faced, 3 PCF.
   B. NRC 1.00, when tested according to ASTM C 423.

2.04 SURFACE BURNING CHARACTERISTICS
   A. Class A Interior Finish:
      1. Flame Spread: 0-25.
      2. Smoke Developed: 50.
   B. In accordance with ASTM E84, NFPA 255 and UL 723.
   C. Provide Interior Finish Classification as required by applicable codes.

2.05 ACCESSORIES
   A. Adhesive: As recommended by the insulation manufacturer.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Examine and verify that receiving substrate surfaces of the structure have no defects or errors
      which would result in poor or defective application or defects in workmanship.
      1. Condition of subsurface to be flat, plumb and level. Clean and free of oil, water, moisture,
         or other deleterious substances.
      2. Report any unsatisfactory conditions.
      3. Installation implies acceptance of subsurface conditions.

3.02 PREPARATION
   A. Structural Adequacy: Ensure the structure to receive insulation is adequate.
   B. Field Verification: Field measure and verify dimensions.

END OF SECTION
SECTION 09 8400
ACOUSTIC ROOM COMPONENTS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Fabric-covered fiberglass core panels and mounting accessories.

1.02 REFERENCE STANDARDS

1.03 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's printed data sheets for products specified.
C. Shop Drawings: Fabrication and installation details, panel layout, and fabric orientation.
D. Selection Samples: Manufacturer's color charts for fabric covering, indicating full range of fabrics, colors, and patterns available.
E. Verification Samples: Fabricated samples of each type of panel specified; 12 x 12 inch, showing construction, edge details, and fabric covering.

1.04 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company with not less than 5 years of experience in manufacturing acoustical products similar to those specified.

1.05 DELIVERY, STORAGE, AND HANDLING
A. Protect acoustical panels from moisture during shipment, storage, and handling. Deliver in factory-wrapped bundles; do not open bundles until panels are needed for installation.
B. Store panels flat, in dry, well-ventilated space; do not stand panels on end.
C. Protect panel edges from damage.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Fabric-Covered Acoustical Panels:
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 FABRIC-COVERED ACOUSTICAL PANELS
   1. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
B. Fiberglass Core Panels:
   1. Density: 7-10 lb/cu ft.
   2. Noise Reduction Coefficient (NRC): 0.70-0.80 when tested in accordance with ASTM C423 for Type A mounting, per ASTM E795.
   3. Panel Width: As detailed.
4. Panel Height: As detailed.
5. Panel Thickness: As necessary to meet required acoustical performance.
7. Corners: As detailed.

C. Fabric Covering: Seamless fabric facing material, for stretched covering of core material.
   1. Fabric: Manufacturer's standard.
   2. Color: As selected by Architect from manufacturer's full range.
   3. Patterns: Where fabric with directional or repeating patterns or fabric with directional weave is used, mark for installation in same direction.

2.03 FABRICATION
   A. Fabric Wrapped, General: Fabricate panels to sizes and configurations indicated, with fabric facing installed without sagging, wrinkles, blisters, or visible seams.
      1. Where radiused or mitered corners are indicated, install fabric to avoid seams or gathering of material.
   B. Tolerances: Fabricate to finished tolerance of plus or minus 1/16 inch for thickness, overall length and width, and squareness from corner to corner.
   C. Factory applied finishes on wood veneer panels to be uniform, smooth, and without blemishes.

2.04 ACCESSORIES
   A. Back-Mounting Accessories: Manufacturer's standard accessories for concealed support, designed to allow panel removal:

PART 3 EXECUTION
3.01 EXAMINATION
   A. Examine substrates for conditions detrimental to installation of acoustical panels. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION
   A. Install acoustical panels in locations indicated, following installation recommendations of panel manufacturer. Align panels accurately, with edges plumb and top edges level. Scribe to fit accurately at adjoining work and penetrations.
   B. Install panels to construction tolerances of plus or minus 1/16 inch for the following:
      1. Plumb and level.
      2. Flatness.

3.03 CLEANING
   A. Clean fabric facing upon completion of installation from dust and other foreign materials, following manufacturer's instructions.
   B. Remove surplus materials, trimmed portions of panels, and debris resulting from installation.

3.04 PROTECTION
   A. Provide protection of installed acoustical panels until completion of the work.
   B. Replace panels that cannot be cleaned and repaired to satisfaction of the Architect.

END OF SECTION
SECTION 09 9000
PAINTS AND COATINGS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Surface preparation.
B. Field application of paints, stains, varnishes, and other coatings.

1.02 RELATED SECTIONS
A. Section 05 5000 - Metal Fabrications: Shop-primed items.
B. Section 09 9600 - High Performance Coatings.
C. Division 23 - Mechanical Identification: Painted identification.
D. Division 26 - Electrical Identification: Painted identification.

1.03 REFERENCES

1.04 DEFINITIONS
A. Conform to ASTM D 16 for interpretation of terms used in this section.

1.05 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide data on all finishing products.
C. Manufacturer's Instructions: Indicate special surface preparation procedures and substrate conditions requiring special attention.
D. Samples: Provide approval samples 24 inch x 24 inch of required specialty or “faux” finishes for Architect approval.

1.06 MOCK-UPS
A. Provide mockups of all painted or stained surfaces. Mock-up may remain in place following approval of the Architect.
B. Provide adequate lighting for mock up review.
C. Notify Owner and Architect minimum 72 hours prior to mock-up review.

1.07 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented experience.
B. Applicator Qualifications: Company specializing in performing the work of this section with minimum five years experience.
1.08 REGULATORY REQUIREMENTS
   A. Conform to applicable code for flame and smoke rating requirements for products and finishes.

1.09 DELIVERY, STORAGE, AND PROTECTION
   A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
   B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
   C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.10 ENVIRONMENTAL REQUIREMENTS
   A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
   B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
   C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
   D. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
   E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.11 EXTRA MATERIALS
   A. See Section 01 6000 - Product Requirements, for additional provisions.
   B. Supply one gallons of each color; store where directed.
   C. Label each container with color in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Paints: Acceptable Manufacturers:
   B. Stains: Acceptable Manufacturers:
   C. Substitutions: Not permitted.

2.02 PAINTS AND COATINGS - GENERAL
   A. Paints and Coatings: Ready mixed, except field-catalyzed coatings. Prepare pigments:
      1. To a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
      2. For good flow and brushing properties.
      3. Capable of drying or curing free of streaks or sags.

2.03 EXTERIOR PAINT SCHEDULE
   A. Concrete:
      1. 1st coat: 140 Color Shield Acrylic Latex Flat.
      2. 2nd coat: 140 Color Shield Acrylic Latex Flat.
B. Concrete Masonry Units (block):
   1. 1st coat: 247 Exterior Masonry Primer.
   2. 2nd coat: 140 Color Shield Acrylic Latex Flat.
   3. 3rd coat: 140 Color Shield Acrylic Latex Flat.

C. Exterior Gypsum Soffit Board:
   1. 1st coat: 220 Weather Shield.
   2. 2nd coat: 140 Color Shield Exterior Acrylic Flat.
   3. 3rd coat: 140 Color Shield Exterior Acrylic Flat.

D. Smooth Wood:
   1. 1st coat: 220 Weather Shield.
   2. 2nd coat: 140 Color Shield Exterior Acrylic Flat.
   3. 3rd coat: 140 Color Shield Exterior Acrylic Flat.

E. Wood Trim:
   1. 1st coat: 220 Weather Shield.
   2. 2nd coat: 140 Color Shield Exterior Acrylic Flat.
   3. 3rd coat: 140 Color Shield Exterior Acrylic Flat.

F. Plywood:
   1. 1st coat: 220 Weather Shield.
   2. 2nd coat: 140 Color Shield Exterior Acrylic Flat.
   3. 3rd coat: 140 Color Shield Exterior Acrylic Flat.

G. Stained Wood:
   1. 1st coat: Cabot 0307.
   2. 2nd coat: Cabot 0307.

H. Ferrous Metal:
   1. 1st coat: 5725 Acrylic Primer/Finish, Acrylic Direct To Metal Primer.
   2. 2nd coat: 5725 Acrylic DTM.
   3. 3rd coat: 5725 Acrylic DTM.

I. Zinc-Coated Metal:
   1. Low-Luster: 2 coats over galvanized metal primer.
   2. (Semigloss) (Full-Gloss), Acrylic Enamel: 2 coats over galvanized metal primer.
   3. Full-Gloss, Alkyd Enamel: 2 coats over galvanized metal primer.

J. Aluminum:
   1. (Semigloss) (Full-Gloss), Acrylic Enamel: 2 coats over primer.
   2. Full-Gloss, Alkyd Enamel: 2 coats over primer.

2.04 INTERIOR PAINT SCHEDULE

A. Concrete and Masonry:
   1. Dura-poxy 1686-121, eggshell: 2 coats over primer.
   2. Dura-poxy 1686-121, eggshell: 2 coats over primer.

B. Concrete Masonry Units (block not factory colored and finished), painted walls.
   1. 1st coat: 247 Masonry Primer.
   2. 2nd coat: Dura-poxy 1686-121.
   3. 3rd coat: Dura-poxy 1686-121.

C. Concrete Masonry Units (block not factory colored and finished), painted ceilings.
   1. 1st coat: 122 Kel Pro Acrylic Block Filler.
   2. 2nd coat: 1007 Ezy-Cote Int. Acrylic Latex.
   3. 3rd coat: 1007 Ezy-Cote Int. Acrylic Latex.
D. Mineral-Fiber-Reinforced Cement Panels:
   1. Dura-poxy 1686-121: 2 coats.

E. Gypsum Board, ceilings:
   1. 1st coat: 1005 KM Pro Latex FWP.
   2. 2nd coat: 1005 KM Pro Latex FWP.

F. Gypsum Board, walls, EG-SHEL Finish/Latex Base:
   1. 1st coat: 970 Acry-Plex High Hide Primer.
   2. 2nd coat: Dura-poxy 1686-121.
   3. 3rd coat: Dura-poxy 1686-121.

G. Gypsum Board, walls, Semi-Gloss Finish/Acrylic:
   1. 1st coat: 970 Acry-Plex High Hide Primer.
   2. 2nd coat: Dura-poxy 1686-121.
   3. 3rd coat: Dura-poxy 1686-121.

H. Gypsum Board, walls, Semi-Gloss Finish/Epoxy:
   1. 1st coat: 970 Acry-Plex High Hide Primer.
   2. 2nd coat: 7100 Envira Cote.
   3. 3rd coat: 7100 Envira Cote.

I. Plaster:
   1. Dura-poxy 1686-121: 2 coats over primer.
   2. Dura-poxy 1686-121: One coat over undercoat and primer.
   3. Dura-poxy 1686-121: Coat over undercoat and primer.
   4. Dura-poxy 1686-121: Coat over primer.

J. Acoustical Plaster:
   1. Low Luster, Acrylic-latex: 2 coats.

K. Woodwork and Hardboard:
   1. 1st coat: 985 Flo-Cote Enamel Undercoat.
   2. 2nd coat: Dura-poxy 1686-121.
   3. 3rd coat: Dura-poxy 1686-121.

L. Stained Woodwork:
   1. Alkyd-Based, Satin Varnish: 2 coats clear-satin varnish over sealer and wood stain.
   2. Waterborne, Satin Varnish: 2 coats clear-satin varnish over sealer and wood stain.
   3. Water-Based, Full-Gloss, Varnish: 2 coats Full-Gloss varnish over sealer and wood stain.
   4. Alkyd-Based Stain, Wax-Polished Finish: 3 coats paste wax oversealer and wood stain.

M. Natural-Finish Woodwork:
   1. Alkyd-Based, Stain Varnish: 2 coats clear-satin varnish over sealer.
   2. Waterborne, Satin Varnish: 2 coats clear-satin varnish over sealer.
   4. Wax-Polished Finish: 3 coats paste wax over sealer.

N. Ferrous Metal:
   1. 1st coat: 5725 Acrylic Primer/Finish, Acrylic Direct To Metal Primer.
   2. 2nd coat: 1649 Pro Enamel.
   3. 3rd coat: 1649 Pro Enamel.

O. Zinc-Coated Metal:
   1. (Low-Luster) (Semigloss) (Full-Gloss), Acrylic Enamel: 2 coats over primer.
   2. (Semigloss) (Full-Gloss), Alkyd Enamel: One coat over undercoater and primer.
2.05 ACCESSORY MATERIALS

A. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified; commercial quality.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that surfaces are ready to receive Work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop-applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
   1. Plaster and Gypsum Wallboard: 12 percent.
   2. Masonry, Concrete, and Concrete Unit Masonry: 12 percent.
   3. Interior Wood: 15 percent, measured in accordance with ASTM D 4442.
   4. Exterior Wood: 15 percent, measured in accordance with ASTM D 4442.

3.02 PREPARATION

A. Surface Appurtenances: Remove electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

B. Surfaces: Correct defects and clean surfaces which affect work of this section.

C. Marks: Seal with shellac those which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Existing Painted Steel surfaces: Remove dirt and other foreign matter by water power washing. Protect adjacent surfaces from water damage.

F. Concrete and Unit Masonry Surfaces to be Painted: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with a solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with a solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

G. Gypsum Board Surfaces to be Painted: Fill minor defects with filler compound. Spot prime defects after repair.

H. Insulated Coverings to be Painted: Remove dirt, grease, and oil from canvas and cotton.

I. Aluminum Surfaces to be Painted: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

J. Galvanized Surfaces to be Painted: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
K. Uncoated Steel and Iron Surfaces to be Painted: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Prime paint entire surface; spot prime after repairs.

L. Shop-Primed Steel Surfaces to be Finish Painted: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.

M. Interior Wood Items to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.

N. Interior Wood Items to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats. Prime concealed surfaces with gloss varnish reduced 25 percent with thinner.

O. Exterior Wood to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.

P. Exterior Wood to Receive Transparent Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after sealer has been applied. Prime concealed surfaces.

Q. Metal Doors to be factory painted.

3.03 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand wood surfaces lightly between coats to achieve required finish.

F. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

G. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

H. Touch-up painting to be conducted full height, from corner to corner. Spot touch-up is not allowed.

3.04 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

A. Refer to Division 23 and Division 26 for schedule of color coding of equipment, duct work, piping, and conduit.

B. Paint shop-primed equipment, where indicated.

C. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
D. Finish equipment, piping, conduit, and exposed duct work in utility areas in colors according to the color coding scheme indicated.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.05 FIELD QUALITY CONTROL

A. See Section 01 4000 - Quality Requirements, for general requirements for field inspection.

3.06 CLEANING

A. Collect waste material that may constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.07 SCHEDULE - SURFACES TO BE FINISHED

A. Do Not Paint or Finish the Following Items:
   1. Items fully factory-finished unless specifically noted.
   2. Fire rating labels, equipment serial number and capacity labels.
   3. Stainless steel items.

B. Mechanical and Electrical: Use paint systems defined for the substrates to be finished.
   1. Paint all insulated and exposed pipes occurring in finished areas to match background surfaces, unless otherwise indicated.
   2. Paint shop-primed items occurring in finished areas.
   3. Paint interior surfaces of air ducts and convectors and baseboard heating cabinets that are visible through grilles and louvers with one coat of Eggshell black paint to visible surfaces.
   4. Paint dampers exposed behind louvers, grilles, and convectors and baseboard cabinets to match face panels.

C. Paint both sides and edges of plywood backboards for electrical and telephone equipment before installing equipment.

END OF SECTION
SECTION 10 1101
VISUAL DISPLAY BOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Markerboards and Tackboards.

1.02 RELATED REQUIREMENTS
A. Section 09 2116 - Gypsum Board Assemblies: Concealed supports in metal stud walls.

1.03 REFERENCE STANDARDS

1.04 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Provide manufacturer's data on markerboard, tackboard, tackboard surface covering, trim, and accessories.
C. Shop Drawings: Indicate wall elevations, dimensions, joint locations, special anchor details.
D. Manufacturer's printed installation instructions.

1.05 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Provide five year warranty for markerboard to include warranty against discoloration due to cleaning, crazing or cracking, and staining.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Visual Display Boards:
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 VISUAL DISPLAY BOARDS
A. Markerboards: Porcelain enamel on steel, laminated to core.
   2. Metal Face Sheet Thickness: 0.024 inch (24 gage).
   3. Core: Particleboard, manufacturer's standard thickness, laminated to face sheet.
   4. Backing: Aluminum foil, laminated to core.
   5. Size: As indicated on drawings.
   8. Accessories: Provide chalk tray.

B. Tackboards: Fine-grained, homogeneous natural cork.
3. Backing: Hardboard, 1/4 inch thick, laminated to tack surface.
4. Surface Burning Characteristics: Flame spread index of 25, maximum, and smoke developed index of 450, maximum, when tested in accordance with ASTM E 84.
5. Size: As indicated on drawings.
6. Frame: Same type and finish as for markerboard.

C. Combination Units and Units Made of More Than One Panel: Factory-assembled markerboards, and tackboards in a single frame, of materials specified above.
   1. Join panels of different construction with H-shaped extruded aluminum molding finished to match frame.
   2. Join panels of similar construction with butt joints, aligned and secured with steel spline concealed in edge of core.
   3. Configuration: As indicated on drawings.
   4. Units Too Large to Ship Assembled: Fully assembled in factory, then disassembled for shipping.

2.03 MATERIALS
A. Porcelain Enameled Steel Sheet: ASTM A 424, Type I, Commercial Steel, with fired-on vitreous finish.
B. Burlap: Tightly woven, flame retardant treated.
C. Hardboard for Cores: AHA A135.4, Class 1 - Tempered, S2S (smooth two sides).
D. Particleboard: ANSI A208.1; wood chips, set with waterproof resin binder, sanded faces.
E. Foil Backing: Aluminum foil sheet, 0.005 inch thick.
F. Adhesives: Type used by manufacturer.

2.04 ACCESSORIES
A. Chalk Tray: Aluminum, manufacturer's standard profile one piece full length of chalkboard, molded ends; concealed fasteners, same finish as frame.
B. Mounting Brackets: Concealed.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that field measurements are as indicated.
B. Verify that internal wall blocking is ready to receive work and positioning dimensions are as indicated on shop drawings.

3.02 INSTALLATION
A. Install boards in accordance with manufacturer's instructions.
B. Secure units level and plumb.
C. Butt Joints: Install with tight hairline joints.

3.03 CLEANING
A. Clean board surfaces in accordance with manufacturer's instructions.
B. Remove temporary protective cover at date of Substantial Completion.

END OF SECTION
SECTION 10 2113.13
METAL TOILET COMPARTMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Metal toilet compartments.
   B. Urinal screens.

1.02 RELATED REQUIREMENTS
   A. Section 05 5000 - Metal Fabrications: Concealed steel support members.
   B. Section 10 2800 - Toilet, Bath, and Laundry Accessories.

1.03 REFERENCE STANDARDS
   A. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; 2015.

1.04 ADMINISTRATIVE REQUIREMENTS
   A. Coordination: Coordinate the work with placement of support framing and anchors in walls and ceilings.

1.05 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of wall, floor, and ceiling supports, door swings.
   C. Product Data: Provide data on panel construction, hardware, and accessories.
   D. Manufacturer's Installation Instructions: Indicate special procedures.

PART 2 PRODUCTS

2.01 MANUFACTURERS
   A. Metal Toilet Compartments:
      4. Substitutions: Section 01 6000 - Product Requirements.

2.02 MATERIALS
   A. Stainless Steel Sheet: ASTM A666, Type 304.

2.03 COMPONENTS
   A. Toilet Compartments: Stainless steel, floor-mounted headrail-braced.
   B. Doors, Panels, and Pilasters: Sheet steel faces, pressure bonded to sound deadening core, formed and closed edges; corners made with corner clips or mitered, welded, and ground smooth.
      1. Panel Faces: 20 gage, 0.0359 inch.
      2. Door Faces: 22 gage, 0.0299 inch.
      3. Pilaster Faces: 20 gage, 0.0359 inch.
      4. Reinforcement: 12 gage, 0.1046 inch.
      5. Internal Reinforcement: Provide in areas of attached hardware and fittings. Mark locations of reinforcement for partition mounted washroom accessories.
   C. Door and Panel Dimensions:
      1. Thickness: 1 inch.
      2. Door Width: 24 inch.
3. Door Width for Handicapped Use: 36 inch, out-swinging.
4. Height: 58 inch.
D. Pilasters: 1-1/4 inch thick, of sizes required to suit compartment width and spacing.
E. Urinal Screens: Wall mounted with two panel brackets, and floor-to-ceiling vertical upright consisting of pilaster anchored to floor and ceiling.

2.04 ACCESSORIES
A. Pilaster Shoes: Formed ASTM A666, Type 304 stainless steel with No. 4 finish, 3 inch high, concealing floor fastenings.
   1. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster.
   2. Provide ceiling attachment using two adjustable hanging studs, attached to above-ceiling framing.
B. Head Rails: Hollow stainless steel tube, 1 by 1-5/8 inch size, with anti-grip strips and cast socket wall brackets.
C. Brackets: Satin stainless steel.
D. Attachments, Screws, and Bolts: Stainless, tamper proof type.
   1. For attaching panels and pilasters to brackets: Through-bolts and nuts; tamper proof.
E. Hardware: Polished stainless steel:
   1. Pivot hinges, gravity type, adjustable for door close positioning; two per door.
   2. Thumb turn or sliding door latch with exterior emergency access feature.
   3. Door strike and keeper with rubber bumper; mounted on pilaster in alignment with door latch.
   4. Coat hook with rubber bumper; one per compartment, mounted on door.
   5. Provide doo pull for outswinging doors.

2.05 FINISHING
A. Stainless Steel Compartments: No. 4 finish.

PART 3 EXECUTION
3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify that field measurements are as indicated.
C. Verify correct spacing of and between plumbing fixtures.
D. Verify correct location of built-in framing, anchorage, and bracing.

3.02 INSTALLATION
A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.
B. Maintain 3/8 to 1/2 inch space between wall and panels and between wall and end pilasters.
C. Attach panel brackets securely to walls using anchor devices.
D. Attach panels and pilasters to brackets. Locate head rail joints at pilaster center lines.

3.03 TOLERANCES
A. Maximum Variation From True Position: 1/4 inch.
B. Maximum Variation From Plumb: 1/8 inch.

3.04 ADJUSTING
A. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16 inch.
B. Adjust hinges to position doors in partial opening position when unlatched. Return out swinging doors to closed position.
C. Adjust adjacent components for consistency of line or plane.

END OF SECTION
SECTION 10 2613
WALL AND CORNER GUARDS

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Corner guards.

1.02 REFERENCE STANDARDS
1.03 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Indicate physical dimensions, features, anchorage details, and rough-in measurements.

PART 2 PRODUCTS
2.01 MANUFACTURERS
   A. Wall and Corner Guards:
      4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 COMPONENTS
   A. Corner Guards - Surface Mounted: Extruded one-piece unit without splices, installed with screws.
      1. Material: Type 304 stainless steel, No. 4 finish.
      2. Thickness: 18 gage, 0.05 inch.
      4. Styles: Provide 90 degree corners and wall end protectors.

2.03 FABRICATION
   A. Fabricate components with tight joints, corners and seams.
   B. Pre-drill holes for attachment.
   C. Form end trim closure by capping and finishing smooth.

PART 3 EXECUTION
3.01 EXAMINATION
   A. Verify that rough openings, concealed blocking, and anchors are correctly sized and located.
   B. Verify that field measurements are as indicated on Drawings.

3.02 INSTALLATION
   A. Install components in accordance with manufacturer's instructions, level and plumb, secured rigidly in position to wall framing members only.

3.03 TOLERANCES
   A. Maximum Variation From Required Height: 1/4 inch.
   B. Maximum Variation From Level or Plane For Visible Length: 1/4 inch.

END OF SECTION
SECTION 10 2800
TOILET ACCESSORIES

PART 1 - GENERAL

1.01 SUMMARY
A. This Section includes toilet accessories.

1.02 SUBMITTALS
A. Submit in accordance with provisions of Section 01 3000 - Administrative Requirements.
B. Product Data: Include construction details, material descriptions and thicknesses, dimensions, profiles, fastening and mounting methods, specified options, and finishes for each type of accessory specified.
C. Setting Drawings: For cutouts required in other work; include templates, substrate preparation instructions, and directions for preparing cutouts and installing anchoring devices.
D. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required. Use designations indicated in the Toilet Accessories Schedule and room designations indicated on Drawings in product schedule.

1.03 QUALITY ASSURANCE
A. Source Limitations: Provide products of same manufacturer for each type of accessory unit and for units exposed to view in same areas, unless otherwise approved by Architect.

1.04 REFERENCES
D. ASTM A 666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar; current edition.
H. TEXAS ACCESSIBILITY STANDARDS (TAS) of the Architectural Barriers Act Article 9102, Texas Civil Statutes.

1.05 COORDINATION
A. Coordinate accessory locations with other work to prevent interference with clearances required for access by disabled persons, proper installation, adjustment, operation, cleaning, and servicing of accessories.
B. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.
1.06 WARRANTY

A. The Warranties submitted under this Section shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and the laws of governing jurisdictions and is in addition to and runs concurrently with other warranties made by the Contractor under requirements of the Contract Documents.

B. Manufacturer's Mirror Warranty: Written warranty, executed by mirror manufacturer agreeing to replace mirrors that develop visible silver spoilage defects within minimum warranty period indicated.
   1. Minimum Warranty Period: 15 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Drawings and specifications are based on manufacturer's literature from Bobrick Washroom Corporation. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in the specifications and in conformance with provisions of Section 01 6000 – Product Requirements.

A. Manufacturers: Subject to compliance with requirements, provide accessories by one of the following:
   1. American Specialties, Inc.
   2. Bobrick Washroom Equipment, Inc.

B. Substitutions: Permitted under provisions of Section 01 6000.

2.02 MATERIALS

A. Drawings and specifications are based on manufacturer's literature from the manufacturer listed on the drawings accessory schedule unless otherwise indicated. Other manufacturers to comply with the minimum levels of material and detailing indicated on the drawings and in conformance with provisions of Section 01 6000 – Product Requirements.

B. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
   1. Grind welded joints smooth.
   2. Fabricate units made of metal sheet of seamless sheets, with flat surfaces.

C. Keys: Provide 3 keys for each accessory to Owner; master key all lockable accessories.

D. Stainless Steel Sheet: ASTM A 666, Type 304.

E. Stainless Steel Tubing: ASTM A 269, Type 304 or 316.


G. Mirror Glass: Float glass, Type I, Class 1, Quality q2 (ASTM C 1036), with silvering, copper coating, and suitable protective organic coating to copper backing in accordance with GSA CID A-3002.

H. Adhesive: Two component epoxy type, waterproof.

I. Fasteners, Screws, and Bolts: Hot dip galvanized, tamper-proof, security type.

J. Expansion Shields: Fiber, lead, or rubber as recommended by accessory
manufacturer for component and substrate.

2.03 FABRICATION

A. Surface-Mounted Toilet Accessories: Unless otherwise indicated, fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with continuous stainless-steel hinge. Provide concealed anchorage where possible.

B. Recessed Toilet Accessories: Unless otherwise indicated, fabricate units of all-welded construction, without mitered corners. Hang doors and access panels with full-length, stainless-steel hinge. Provide anchorage that is fully concealed when unit is closed.

C. Framed Glass-Mirror Units: Fabricate frames for glass-mirror units to accommodate glass edge protection material. Provide mirror backing and support system that permits rigid, tamper-resistant glass installation and prevents moisture accumulation.
   1. Provide galvanized steel backing sheet, not less than 0.034 inch (0.85 mm) and full mirror size, with nonabsorptive filler material. Corrugated cardboard is not an acceptable filler material.

D. Mirror-Unit Hangers: Provide mirror-unit mounting system that permits rigid, tamper- and theft-resistant installation, as follows:
   1. One-piece, galvanized steel, wall-hanger device with spring-action locking mechanism to hold mirror unit in position with no exposed screws or bolts.
   2. Heavy-duty wall brackets of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.

E. Keys: Provide universal keys for internal access to accessories for servicing and resupplying. Provide minimum of six keys to Owner's representative.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.

B. Secure mirrors to walls in concealed, tamper-resistant manner with special hangers, toggle bolts, or screws. Set units level, plumb, and square at locations indicated, according to manufacturer's written instructions for substrate indicated.

C. Install grab bars to withstand a downward load of at least 250 lbf when tested according to method in ASTM F 446.

D. Contractor to install blocking per manufacturer written instructions. Comply with manufacturer's recommendations for backing and proper support.

E. Verify installation will not interfere with door swings or use of fixtures. Should conflict occur, notify Architect immediately prior to commencement of Work.

F. Use fasteners and anchors suitable for substrate and project conditions

G. Conceal evidence of drilling, cutting, and fitting to room finish

H. Test for proper operation.

3.02 ADJUSTING AND CLEANING

A. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items.

B. Remove temporary labels and protective coatings.

C. Clean and polish exposed surfaces according to manufacturer's written recommendations.
3.03 TOILET ACCESSORIES SCHEDULE

A. Design Basis: Bobrick Washroom Accessories
   Schedule to Be Determined

END OF SECTION
PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Fire extinguishers and fire extinguisher cabinets.

1.02 QUALITY ASSURANCE

A. Single Source Responsibility: Obtain extinguishers and cabinets from one source from a single manufacturer.

B. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Standard for Portable Fire Extinguishers."

C. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

1.03 SUBMITTALS

A. Product Data:
   1. Product data for each type of product specified.
   2. For fire extinguisher cabinets include rough-in dimensions, details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style, door construction, panel style, and materials.

B. Samples:
   1. Samples for initial selection purposes in form of manufacturer's color charts showing full range of colors available for those units with factory-applied color finishes.
   2. Samples for verification purposes of each type of metal finish required, prepared on metal samples of same thickness and alloy indicated for final unit of Work.
      a. Where finishes involve normal color and texture variations, include sample sets showing full range of variations expected.

PART 2 - PRODUCTS

2.01 GENERAL

A. All materials shall meet or exceed all applicable referenced standards, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.

2.02 FIRE EXTINGUISHERS

A. Provide fire extinguishers for each extinguisher cabinet and other locations indicated, in colors and finishes selected by Architect from manufacturer's standard, that comply with authorities having jurisdiction.

B. Provide fire extinguisher types as follows using fire extinguisher schedule on Drawings:
   1. Multi-Purpose Dry Chemical Type: UL Rated 2A-10BC, 5 lb. nominal capacity, in enameled steel container, for Class A, B, and C fires.
      a. Amerex Model B500/B500T
      b. Ansul Sentry Model A05
      c. Badger Model B5M-1/B5M1-B
   2. Multi-Purpose Dry Chemical Type: UL Rated 4A-80BC, 10 lb. nominal capacity, in enameled steel container, for Class A, B, and C fires.
      a. Amerex Model B402/B402T
      b. Ansul Sentry Model A10T
      c. Badger Model B10M/B10M1-B
3. Stored-Pressure Wet Chemical Type: UL-rated 2AK, 6-liters nominal capacity, in stainless steel container with pressure-indicating gauge.
   a. Amerex Model B260
   b. Ansul Model K01-2
   c. Badger Model WC100

4. Carbon Dioxide Type: UL rated 5 BC, 5 lb nominal capacity, in manufacturer's standard enameled metal container.
   Amerex Model 322
   Ansul Model CD05-1
   Badger Model B5V

5. Carbon Dioxide Type: UL rated 10 BC, 10 lb nominal capacity, in manufacturer's standard enameled metal container.
   a. Amerex Model 330
   b. Ansul Model CD10-1
   c. Badger Model B10V

6. Halotron Type: UL rated 5 BC, 5 lb nominal capacity, in enameled steel container with pressure indicating gauge.
   a. Amerex Model B386T
   b. Ansul Model FE05
   c. Badger Model 5 HB

C. Extinguisher Drawing Schedule: Provide the following fire extinguishers, brackets, and cabinets at locations indicated:
   1. Type FE-1: Bracket mounted 2A-10BC dry chemical.
   2. Type FE-2: In-cabinet 2A-10BC dry chemical.
   3. Type FE-3: Bracket mounted 2AK 6-lites Stored-Pressurized Wet Chemical extinguisher.
   4. Type FE-4: Bracket mounted 5-BC Carbon Dioxide extinguisher.
   5. Type FE-5: In-cabinet 5-BC Carbon Dioxide extinguisher.
   6. Type FE-6: Bracket mounted 10-BC Carbon Dioxide extinguisher.
   7. Type FE-7: In-cabinet 10-BC Carbon Dioxide extinguisher.
   8. Type FE-8: Bracket mounted 5-BC Halotron extinguisher.

2.03 MOUNTING BRACKETS

A. Brackets: Designed to prevent accidentally dislodging extinguisher, of sizes required for type and capacity of extinguisher indicated.
   Provide manufacturer’s standard metal brackets for extinguishers not located in cabinets.

2.04 FIRE EXTINGUISHER CABINETS

A. Provide fire extinguisher cabinets where indicated and from the same manufacturer as the extinguishers. Provide sizes required for housing specified fire extinguishers, and as follows:

B. Construction: Manufacturer's standard enameled steel box, with trim, frame, door, and hardware to suit cabinet type, trim style, and door style indicated. Weld joints and grind smooth. Miter and weld perimeter door frames.

C. Fire Rated Cabinets: UL listed with UL Listing Mark with rating of wall where it is installed.

D. Cabinet Type: Suitable for mounting conditions indicated of the following types:
   1. Recessed: Cabinet box (tub) fully recessed in walls of sufficient depth to suit style of trim indicated.
      a. Larsen’s Architectural Series 2720-R and FS 2720-R
      b. J.L. Industries 4015 and 4015 FX
   2. Surface Mounted: Cabinet box (tub) fully exposed and mounted directly on wall.
      a. Larsen’s Architectural Series 2720-SM and FS 2720-SM
      b. J.L. Industries 4013 and 4013 FX
3. Semi-recessed: Cabinet box (tub) partially recessed in walls of shallow depth.
   a. Larsen’s Architectural Series 2720-RL (2-1/2” Trim Style) and FS 2720-RL
   b. Larsen’s Architectural Series 2720-RM (4-1/2” Trim Style) and FS 2720-RM
   c. J.L. Industries 4017 and 4017FX

E. Trim Style: Fabricate trim in one piece with corners mitered, welded, and ground smooth.
   1. Trimless with hidden flange of same metal and finish as box (tub) that overlaps surrounding wall finish and is concealed from view by an overlapping door.
   2. Exposed Trim: One piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).
      a. Square edge trim with 1/4 to 5/16 inch backbend depth.
      b. Rolled edge trim with 1-1/4 inch backbend depth.
      c. Rolled edge trim with 2-1/2 inch backbend depth.
      d. Rolled edge trim with 4-1/2 inch backbend depth.
      e. Trim Metal: Of same metal and finish as door.
      f. Trim Metal: Enameled steel.

F. Door Material and Construction: Manufacturer’s standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.
   1. Cold-Rolled Steel: Solid, white baked acrylic enamel, which can be used either as a finish or prime coat. Door shall include lettering.

G. Identify fire extinguisher in cabinet with FIRE EXTINGUISHER lettering applied to door vertically. Provide lettering to comply with authorities having jurisdiction for letter style, red in color, size, spacing, and location.

H. Identify bracket mounted extinguishers with FIRE EXTINGUISHER in red letter decals applied to wall surface. Use letter size, style, and location as selected by Architect.

I. Door Style: Manufacturer’s standard design.
   1. Solid Panel: Full flush opaque panel of material indicated.

J. Door Hardware:
   1. Provide manufacturer’s standard door operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide concealed or continuous type hinge permitting door to open 180 deg.
   2. Special Requirement: Provide recessed concealed handle with cam action latch.

2.05 FINISHES FOR FIRE EXTINGUISHER CABINETS, GENERAL

A. Comply with NAAMM "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering prior to shipping.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Installation shall meet or exceed all applicable federal, state and local requirements, referenced standards and conform to codes and ordinances of authorities having jurisdiction.

B. All installation shall be in accordance with manufacturer’s published recommendations.

C. Install in locations and at mounting heights indicated or, if not indicated, at heights to comply with applicable regulations of governing authorities.
   Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.
   Fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb.
SECTION 10 5613
METAL STORAGE SHELVING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Metal storage shelving.
B. Shelving accessories.

1.02 SUBMITTALS
A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Rated uniform shelf loads.
   2. Details of shelving assemblies, including reinforcement.
   3. Accessories.
   4. Installation methods.
   5. Specimen warranty.
C. Test Reports: Provide independent agency test reports documenting compliance with specified structural requirements.
D. Shop Drawings: Indicate location, type, and layout of shelving, including lengths, heights, and aisle layout, and relationship to adjacent construction.
   1. Indicate methods of achieving specified anchoring requirements.
E. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of documented experience.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Inspect for dents, scratches, or other damage. Replace damaged units.
B. Store in manufacturer's unopened packaging until ready for installation.
C. Store under cover and elevated above grade.

1.05 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Provide one year manufacturer warranty covering defects of manufacturing and workmanship and rust and corrosion.

PART 2 PRODUCTS

2.01 MANUFACTURERS
A. Free standing metal storage lockers:
   2. Substitutions: See Section 01 6000 - Product Requirements.

2.02 STORAGE UNITS
A. See drawings for quantities and locations.
B. Anchors: Provide anchoring hardware to secure each storage unit to floor and wall.
   1. Provide hardware of type recommended by manufacturer for substrate.
C. Welded 3 door heavy duty storage lockers.
   1. Unit Height: 75 inches.
   2. Storage dimension per unit: 30 inches w 30 inches.
3. Clearance between shelves: 21 inches.
5. Provide doors with separate padlock hasps.
6. Total Capacity: 1500 pounds.
7. Shelf Capacity: 500 pounds per shelf.
9. Doors: Formed steel, hinged, with mounting brackets.
   a. Width: To fit shelf width.
   b. Height: To fit shelf spacing.

D. Acceptable Product.
   1. Model Number 383160 manufactured by Jesco industries Inc..
   2. Substitutions: See Section 01 6000 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION
   A. Verify that substrate is level and that clearances are as specified.
   B. Verify that walls are suitable for storage attachment.
   C. Do not begin installation until substrates have been properly prepared.
   D. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION
   A. Clean surfaces thoroughly prior to installation.
   B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION
   A. Install in accordance with manufacturer's instructions.
   B. Anchor and reinforce as specified, as indicated on drawings, and as recommended by manufacturer.
   C. Install storage units with shelf surfaces level and vertical supports plumb; adjust feet and bases as required.

3.04 CLEANING
   A. Clean shelving and surrounding area after installation.

3.05 PROTECTION
   A. Protect installed products until completion of project.
   B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
SECTION 12 2400
WINDOW SHADES

PART 1 GENERAL
1.01 SECTION INCLUDES
   A. Window shades and accessories.

1.02 RELATED REQUIREMENTS
   A. Section 06 1000 - Rough Carpentry: Concealed wood blocking for attachment of headrail brackets.
   B. Section 09 2116 - Gypsum Board Assemblies: Substrate for window shade systems.

1.03 REFERENCE STANDARDS

1.04 ADMINISTRATIVE REQUIREMENTS
   A. Sequencing:
      1. Do not fabricate shades until field dimensions for each opening have been taken.
      2. Do not install shades until final surface finishes and painting are complete.

1.05 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Provide manufacturer's standard catalog pages and data sheets including materials, finishes, fabrication details, dimensions, profiles, mounting requirements, and accessories.
   C. Shop Drawings: Include shade schedule indicating size, location and keys to details.
   D. Source Quality Control Submittals: Provide test reports indicating compliance with specified fabric properties.
   E. Selection Samples: Include fabric samples in full range of available colors and patterns.
   F. Verification Samples: Minimum size 6 inches square, representing actual materials, color and pattern.
   G. Manufacturer's Instructions: Include instructions for storage, handling, protection, examination, preparation, and installation of product.
   H. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

1.06 QUALITY ASSURANCE
   A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years of experience.
   B. Installer Qualifications: Company specializing in performing work of this type with minimum five years of experience.

1.07 MOCK-UP
   A. Mock-Up: Provide full size mock-up of window shade complete with selected shade fabric including sample of seam when applicable.
      1. Obtain Architect's approval of light and privacy characteristics of fabric prior to fabrication.
      2. Full-sized mock-up may become part of the final installation, following approval.

1.08 DELIVERY, STORAGE, AND HANDLING
   A. Deliver shades in manufacturer's unopened packaging, labeled to identify each shade for each opening.
   B. Handle and store shades in accordance with manufacturer's recommendations.
1.09 FIELD CONDITIONS
A. Do not install products under environmental conditions outside manufacturer’s absolute limits.

1.10 WARRANTY
A. See Section 01 7800 - Closeout Requirements, for additional warranty requirements.
B. Provide manufacturer's warranty from the Date of Substantial Completion, covering the following:
   1. Shade Hardware: One year.
   2. Fabric: One year.
   3. Aluminum and Steel Coatings: One year.

PART 2 PRODUCTS
2.01 MANUFACTURERS
A. Manually Operated Roller Shades:
   5. Substitutions: See Section 01 6000 - Product Requirements.
B. Source Limitations: Furnish products produced by a single manufacturer and obtained from a single supplier.

2.02 WINDOW SHADE APPLICATIONS
A. Type 1: Blackout shade; 0% openness. Install at Studio and other rooms with projection systems.
   1. Color selected by Architect.
B. Type 2: Shades with 3% openness. Install at remaining windows.
   1. Fabric: Shadeweave 2410.
   2. Color selected by Architect.
      a. Composition: 35% fiberglass, 65% vinyl on fiberglass.
      b. Mesh weight: 14.1 oz/yd²
      c. Fabric thickness: .019 inch.
      d. Openness factor: 3 percent.
      e. UV blockage: 97 percent.
C. Type: Roller shades.
D. Mounting: As indicated on drawings.

2.03 ROLLER SHADES
A. Roller Shades: Fabric roller shades complete with mounting brackets, roller tubes, hembars, hardware and accessories; fully factory-assembled.
   1. Drop: Regular roll.
   2. Size: As indicated on drawings.
B. Fabric: Non-flammable, color-fast, impervious to heat and moisture, and able to retain its shape under normal operation; PVC-free.
   1. Privacy Shades: Soften the light yet still reveal some details to the outside; Openness Factor equal to 3 percent.
   2. Blackout Shades: Block virtually all the light; Openness Factor equal to zero (0).
   3. Flammability: Pass NFPA 701 large and small tests.
C. Roller Tube: As required for type of operation, extruded aluminum with end caps.
   1. Dimensions: Manufacturer's standard, selected for suitability for installation conditions, span, and weight of shades.
2. Fabric Attachment: Utilize extruded channel in tube to accept vinyl spline welded to fabric edge.

D. Hembars and Hembar Pockets: Wall thickness designed for weight requirements and adaptation to uneven surfaces, to maintain bottom of shade straight and flat.
   2. Blackout Shades: Provide a slot in bottom bar with wool-pile light seal.

E. Manual Operation: Clutch operated continuous loop; beaded ball chain.

2.04 ACCESSORIES
A. Fascias: Size as required to conceal shade mounting.
   1. Style: As selected by Architect from shade manufacturer's full selection.
   2. Material and Color: To match shade.
B. Brackets and Mounting Hardware: As recommended by manufacturer for mounting configuration and span indicated.
C. Fasteners: Non-corrosive, and as recommended by shade manufacturer.

2.05 FABRICATION
A. Field measure finished openings prior to ordering or fabrication.
B. Fabricate shades to fit openings within specified tolerances.
   1. Vertical Dimensions: Fill openings from head to sill with 1/4 inch space between bottom bar and window stool.
C. Dimensional Tolerances: As recommended in writing by manufacturer.
D. At openings requiring continuous multiple shade units with separate rollers, locate roller joints at window mullion centers; butt rollers end-to-end.

PART 3 EXECUTION
3.01 INSTALLATION
A. Install in accordance with manufacturer's instructions and approved shop drawings, using mounting devices as indicated.
B. Installation Tolerances:
   1. Maximum Offset From Level: 1/16 inch.
C. Adjust level, projection and shade centering from mounting bracket. Verify there is no telescoping of shade fabric. Ensure smooth shade operation.

3.02 CLEANING
A. Clean soiled shades and exposed components as recommended by manufacturer.
B. Replace shades that cannot be cleaned to "like new" condition.

3.03 CLOSEOUT ACTIVITIES
A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
B. Demonstration: Demonstrate operation and maintenance of window shade system to Owner's personnel.

3.04 PROTECTION
A. Protect installed installed products from subsequent construction operations.
B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
PART 1 GENERAL

1.01 SECTION INCLUDES
   A. Countertops for architectural cabinetwork.

1.02 RELATED SECTIONS
   A. Section 06 4100 – Plastic Laminate Clad Cabinets.

1.03 REFERENCES
   G. NEMA LD 3 - High-Pressure Decorative Laminates; 2005.
   H. PS 1 - Construction and Industrial Plywood; 1995.

1.04 SUBMITTALS
   A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
   B. Product Data: Manufacturer's data sheets on each product to be used, including:
      1. Preparation instructions and recommendations.
      2. Storage and handling requirements and recommendations.
      3. Specimen warranty.
   C. Shop Drawings: Complete details of materials and installation; combine with shop drawings of cabinets and casework specified in other sections.
   D. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
   E. Verification Samples: For each finish product specified, minimum size 6 inches square, representing actual product, color, and patterns.
   F. Test Reports: Chemical resistance testing, showing compliance with specified requirements.
   G. Installation Instructions: Manufacturer's installation instructions and recommendations.
   H. Maintenance Data: Manufacturer’s instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE
   A. Installer Qualifications: Installation by fabricator.
1.06 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

1.07 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 2 PRODUCTS

2.01 COUNTERTOP ASSEMBLIES

A. Solid Surfacing Countertops: Solid surfacing sheet or plastic resin casting over continuous substrate.
   1. Flat Sheet Thickness: 1/4 inch, minimum.
   2. Solid Surfacing Sheet and Plastic Resin Castings: Complying with ISSFA-2 and NEMA LD 3; acrylic or polyester resin, mineral filler, and pigments; homogenous, non-porous and capable of being worked and repaired using standard woodworking tools; no surface coating; color and pattern consistent throughout thickness.
      a. Surface Burning Characteristics: Flame spread 25, maximum; smoke developed 450, maximum; when tested in accordance with ASTM E 84.
      b. NSF approved for food contact.
      c. Sinks and Bowls: Integral castings; minimum 3/4 inch wall thickness; comply with ANSI Z124.3.
      d. Finish on Exposed Surfaces: As approved by Architect.
      e. Color and Pattern: To be selected from manufacturer's full line.
      f. Manufacturers:
         5) Substitutions: See Section 01 6000 - Product Requirements.
   3. Other Components Thickness: 1/2 inch, minimum.
   4. Exposed Edge Treatment: Built up to minimum 1-1/4 inch thick; radiused edge.
   5. Back and End Splashes: Same sheet material, radiused top; minimum 4 inches high.

2.02 ACCESSORY MATERIALS

A. Plywood for Supporting all Substrate: FSC Certified PS 1 Exterior Type, AC veneer grade, minimum 5-ply; minimum 3/4 inch thick; join lengths using metal splines.

B. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

C. Cove Molding for Top of Splashes: Rubber with semi-gloss finish and T-spline to fit between splash and wall; 1/2 inch by 1/2 inch; color as selected. To be applied to all splashes with the exception of tile splashes.

D. Joint Sealant: Mildew-resistant silicone sealant, color approved by Architect. To be applied at all casework and millwork joints, corners and where at dissimilar materials.

2.03 FABRICATION

A. Fabricate tops and splashes in the largest sections practicable, with top surface of joints flush.
   1. Join lengths of tops using best method recommended by manufacturer.
2. Prepare all cutouts accurately to size; replace tops having improperly dimensioned or unnecessary cutouts or fixture holes.

B. Provide back/end splash wherever counter edge abuts vertical surface unless otherwise indicated.
   1. Secure to countertop with concealed fasteners and with contact surfaces set in waterproof glue.
   2. Height: 4 inches, unless otherwise indicated.

C. Solid Surfacing: Fabricate tops up to 144 inches long in one piece; join pieces with adhesive sealant in accordance with manufacturer's recommendations and instructions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Verify that wall surfaces have been finished and mechanical and electrical services and outlets are installed in proper locations.

3.02 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.03 INSTALLATION

A. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.

B. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.

C. Seal joint between back/end splashes and vertical surfaces.
   1. Where indicated use rubber cove molding.
   2. Where applied cove molding is not indicated use specified sealant.

3.04 CLEANING AND PROTECTION

A. Clean countertops surfaces thoroughly.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION
PART 1 GENERAL

1.01 SUMMARY

A. Section includes: Hydraulic passenger elevators as shown and specified. Elevator work includes:
   2. Elevator car enclosures, hoistway entrances and signal equipment.
   3. Jack(s).
   4. Operation and control systems.
   5. Accessibility provisions for physically disabled persons.
   6. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
   7. Materials and accessories as required to complete the elevator installation.

B. Related Sections:
   1. Division 1 General Requirements: Meet or exceed all referenced sustainability requirements.
   2. Division 3 Concrete: Installing inserts, sleeves and anchors in concrete.
   3. Division 4 Masonry: Installing inserts, sleeves and anchors in masonry.
   4. Division 5 Metals:
      a. Providing hoist beams, pit ladders, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
      b. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
   5. Division 9 Finishes: Providing elevator car finish flooring and field painting unfinished and shop primed ferrous materials.
   6. Division 22 Plumbing:
      a. Sump pit and oil interceptor.
   7. Division 23: Heating and Ventilation:
      a. Heating and ventilating hoistways.
   8. Division 16 Sections:
      a. Providing electrical service to elevators. (note: fused disconnect switch to be provided as part of elevator manufacture product, see section 2.11 Miscellaneous elevator components for further details.)
      b. Emergency power supply, transfer switch and auxiliary contacts.
      c. Heat and smoke sensing devices.
      d. Convenience outlets and illumination in hoistway and pit.

C. Work Not Included: General contractor shall provide the following in accordance with the requirements of the Model Building Code and ANSI A17.1 Code. For specific rules, refer to ANSI A17.1, Section 300 for hydraulic elevators. State or local requirements must be used if more stringent.
   1. Elevator hoist beam to be provided at top of elevator shaft. Beam must be able to accommodate proper loads and clearances for elevator installation and operation.
   2. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports and bracing including all setting templates and diagrams for placement.
   3. Hatch walls require a minimum two hours of fire rating. Hoistway should be clear and plumb with variations not to exceed 1/2” at any point.
   4. Elevator hoistways shall have barricades, as required.
   5. Install bevel guards at 75° on all recesses, projections or setbacks over 2” (4” for A17.1 2000 areas) except for loading or unloading.
   6. Provide rail bracket supports at pit, each floor and roof. For guide rail bracket supports, provide divider beams between hoistway at each floor and roof.
   7. Pit floor shall be level and free of debris. Reinforce dry pit to sustain normal vertical
forces from rails and buffers.

8. Where pit access is by means of the lowest hoistway entrance, a vertical ladder of non-combustible material extending 42" minimum, (48" minimum for A17.1-2000 areas) shall be provided at the same height, above sill of access door or handgrips.

9. All wire and conduit should run remote from the hoistways.

10. When heat, smoke or combustion sensing devices are required, connect to elevator control cabinet terminals. Contacts on the sensors should be sized for 12 volt D.C.

11. Install and furnish finished flooring in elevator cab.

12. Finished floors and entrance walls are not to be constructed until after sills and door frames are in place. Consult elevator contractor for rough opening size. The general contractor shall supply the drywall framing so that the wall fire resistance rating is maintained, when drywall construction is used.

13. Where sheet rock or drywall construction is used for front walls, it shall be of sufficient strength to maintain the doors in true lateral alignment. Drywall contractor to coordinate with elevator contractor.

14. Before erection of rough walls and doors; erect hoistway sills, headers, and frames. After rough walls are finished; erect fascias and toe guards. Set sill level and slightly above finished floor at landings.

15. To maintain legal fire rating (masonry construction), door frames are to be anchored to walls and properly grouted in place.

16. The elevator wall shall interface with the hoistway entrance assembly and be in strict compliance with the elevator contractor's requirements.

17. General Contractor shall fill and grout around entrances, as required.

18. All walls and sill supports must be plumb where openings occur.

19. Locate a light fixture (200 lx / 19 fc) and convenience outlet in pit with switch located adjacent to the access door.

20. Provide telephone line, light fixture (200 lx / 19 fc), and convenience outlet in the hoistway at the landing where the elevator controller is located. Typically this will be at the landing above the 1st floor. Final location must be coordinated with elevator contractor.

21. As indicated by elevator contractor, provide a light outlet for each elevator, in center of hoistway.

22. For signal systems and power operated door: provide ground and branch wiring circuits.

23. For car light and fan: provide a feeder and branch wiring circuits to elevator control cabinet.

24. Controller landing wall thickness must be a minimum of 8 inches thick. This is due to the controller being mounted on the second floor landing in the door frame on the return side of the door. For center opening doors, the controller is located on the right hand frame (from inside the elevator cab looking out). These requirements must be coordinated between the general contractor and the elevator contractor.

25. Cutting, patching and recesses to accommodate hall button boxes, signal fixtures, etc..

1.02 SUBMITTALS

A. Product data: When requested, the elevator contractor will provide standard cab, entrance and signal fixture data to describe product for approval.

B. Shop drawings:
   1. Show equipment arrangement in the pit and hoistway. Provide plans, elevations, sections and details of assembly, erection, anchorage, and equipment location.
   2. Indicate elevator system capacities, sizes, performances, safety features, finishes and other pertinent information.
   3. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
   4. Indicate electrical power requirements and branch circuit protection device recommendations.
B. Powder Coat Paint selection: Submit manufacturer’s standard selection charts for exposed finishes and materials.

C. Plastic laminate selection: Submit manufacturer’s standard selection charts for exposed finishes and materials.

D. Metal Finishes: Upon request, standard metal samples provided.

F. Operation and maintenance data. Include the following:
   2. Parts list, with recommended parts inventory.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: An approved manufacturer with minimum fifteen years experience in manufacturing, installing, and servicing commercial elevators.
   1. Must be the manufacturer of the power unit, controller, signal fixtures, door operators cab, entrances, and all other major parts of the elevator operating equipment.
      a. The major parts of the elevator equipment shall be manufactured in the United States, and not be an assembled system.
   2. The manufacturer shall have a documented, on-going quality assurance program.
   5. LEED Gold certified elevator manufacturing facility.

B. Installer Qualifications: The manufacturer or an authorized agent of the manufacturer with not less than fifteen years of satisfactory experience installing elevators equal in character and performance to the project elevators.

C. Regulatory Requirements:
   1. ASME/ANSI A17.1 Safety Code for Elevators and Escalators, latest edition or as required by the local building code.
   6. CAN/CSA C22.1 Canadian Electrical Code.
   8. California Department of Public Health Standard Method V1.1–2010, CA Section 01350

D. Fire-rated Entrance Assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(B), and NFPA 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

E. Inspection and testing: Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
   1. Arrange for inspections and make required tests.
   2. Deliver to the Owner upon completion and acceptance of elevator work.

F. Product Qualifications:
   1. LCA, EPD and HPD data must be provided for all major components of the elevator system.
   2. LCA data must be compatible with GaBi Software.
   3. Environmental Product Declaration (EPD): Publicly available, critically reviewed life cycle analysis having at least a cradle-to-gate scope.
   4. GreenScreen Chemical Hazard Analysis: All ingredients of 100 parts-per-million or greater evaluated using GreenScreen for Safer Chemicals Method v1.2.
   5. Health Product Declarations (HPD v2 or later): Complete, published declaration with full disclosure of known hazards, prepared using the Health Product Declaration Collaborative's "HPD builder" on-line tool; Unknown hazard listed will not be considered
acceptable.

1.04 DELIVERY, STORAGE AND HANDLING

A. Manufacturing will deliver elevator materials, components and equipment and the contractor is responsible to provide secure and safe storage on job site.

1.05 PROJECT CONDITIONS

A. Prohibited Use: Elevators shall not be used for temporary service or for any other purpose during the construction period before Substantial Completion and acceptance by the purchaser unless agreed upon by Elevator Contractor and General Contractor with signed temporary agreement.

1.06 WARRANTY

A. Warranty: Submit elevator manufacturer's standard written warranty agreeing to repair, restore or replace defects in elevator work materials and workmanship not due to ordinary wear and tear or improper use or care for 12 months after completion of installation or acceptance thereof by beneficial use, whichever is earlier.

1.07 MAINTENANCE

A. Furnish maintenance and call back service for a period of 12 months for each elevator after completion of installation or acceptance thereof by beneficial use, whichever is earlier, during normal working hours, excluding callbacks. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation.
   1. Manufacturer shall have a service office and full time service personnel within a 100 mile radius of the project site.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: ThyssenKrupp Elevator

2.02 MATERIALS, GENERAL

A. All Elevator Cab materials including frame, buttons, lighting, wall and ceiling assembly, laminates and carpet shall have an EPD and an HPD, and shall meet the California Department of Public Health Standard Method V1.1–2010, CA Section 01350 as mentioned in 1.03.9 of this specification.

B. Colors, patterns, and finishes: As selected by the Architect from manufacturer's standard colors, patterns, and finish charts.

C. Steel:
   1. Shapes and bars: Carbon.
   2. Sheet: Cold-rolled steel sheet, commercial quality, Class 1, matte finish.
   3. Finish: Factory-applied baked enamel for structural parts, powder coat for architectural parts. Color selection must be based on elevator manufacture's standard selections.

D. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050" thickness. Laminate selection must be based on elevator manufacture’s standard selections.

E. Carpet: By others.

2.03 HOISTWAY EQUIPMENT

A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded
with a wood subfloor. Underside of the platform shall be fireproofed. The car platform shall be designed and fabricated to support one-piece loads weighing up to 25% of the rated capacity.

B. Sling: Steel stiles affixed to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure.

C. Guide Rails: Steel, omega shaped, fastened to the building structure with steel brackets.
   1. Guide Shoes: Slide guides shall be mounted on top and bottom of the car.
   2. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on a steel template that is fastened to the pit floor. Provide extensions if required by project conditions.
   3. Jack: Jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to insure adequate strength and freedom from leakage. Brittle material, such as gray cast iron, is prohibited in the jack construction. Provide the following jack type: Twin post holeless telescopic 2-stage. Two jacks piped together, mounted one on each side of the car with each having two telescopic sections designed to extend in a synchronized manner when oil is pumped into the Assembly. Each jack section will be guided from within the casing or the plunger assembly used to house the section. Each plunger shall have a high pressure sealing system which will not allow for seal movement or displacement during the course of operation. Each Jack Assembly shall have a check valve built into the assembly to allow for automatically re-syncing the two plunger sections by moving the jack to its fully contracted position. The jack shall be designed to be mounted on the pit floor or in a recess in the pit floor. Each jack section shall have a bleeder valve to discharge any air trapped in the section.
   4. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the landings and correct for overtravel or undertavel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.

Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary code compliant pipe and fittings shall be provided to connect the power unit to the jack unit. Provide proper grade readily biodegradable oil as specified by the manufacturer of the power unit (see Power Unit section 2.04.G for further details).

5 Pit moisture/water sensor located approximately 1 foot above the pit floor to be provided. Once activated, elevator will perform “flooded pit operation”, which will run the car up to the designated floor, cycle the doors and shut down and trip the circuit breaker shunt to remove 3 phase power from all equipment, including pit equipment.

6 Motorized oil line shut-off valve shall be provided that can be remotely operated from the controller landing service panel. Also a means for manual operation at the valve in the pit is required.

2.04 POWER UNIT

A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit located in the elevator pit consisting of the following items:
   1. NEMA 4/Sealed Oil reservoir with tank cover including vapor removing tank breather
   2. An oil hydraulic pump.
   3. An electric motor.
   4. Electronic oil control valve with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and electro-magnetic controlling solenoids.

B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.

C. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating – motors shall be capable of 80 starts per hour with a 30% motor run time during each start.
D. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line.
   1. Relief valve shall be adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.
   2. Up start and stop valve shall be adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
   3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
   4. Lowering valve and leveling valve shall be adjustable for down start speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling after slowdown is initiated.
   5. Provided with constant speed regulation in both up and down direction. Feature to compensate for load changes, oil temperature, and viscosity changes.
   7. A secondary hydraulic power source (powered by 110VAC single phase) must be provided. This is required to be able to raise (reposition) the elevator in the event of a system component failure (i.e. pump motor, starter, etc.)
   8. Oil Type: Readily biodegradable that is USDA certified biobased product, ultra low toxicity, readily biodegradable, energy efficient, high performing fluid made from canola oil with antioxidant, anticorrosive, antifoaming, and metal-passivating additives. Especially formulated for operating in environmentally sensitive areas. USDA certified biobased product, 95% bio-based content, per ASTM D6866.

2.05 HOISTWAY ENTRANCES

A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening bolted/knock down construction.
   1. Manufacturer's standard entrance design consisting of hangers, doors, hanger supports, hanger covers, fascia plates, sight guards, and necessary hardware.
   2. Main landing door & frame finish: Stainless steel panels, no. 4 brushed finish.
   3. Typical door & frame finish: Stainless steel panels with no. 4 brushed finish.

B. Integrated Control System: the elevator controller to be mounted to hoistway entrance above 1st landing. The entrance at this level, shall be designed to accommodate the control system and provide a means of access to critical electrical components and troubleshooting features. See section 2.09 Control System for additional requirements.

C. At the controller landing, the hoistway entrance frame shall have space to accommodate and provide a lockable means of access (group 2 security) to a 3 phase circuit breaker. See section 2.11 Miscellaneous Elevator Components for further details.

D. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Provide door restriction devices as required by code.

E. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway horizontal sliding door.
   1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
   2. Hangers: Provide an adjustable device beneath the track to limit the up-thrust of the doors during operation.
   3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.

F. Hoistway Sills: Extruded metal, with groove(s) in top surface. Provide mill finish on aluminum.
2.06 CAR ENCLOSURE

A. Car Enclosure:
   1. Walls: Cab type TKLP, durable wood core finished on both sides with high pressure plastic laminate.
   2. Canopy: Cold-rolled steel with hinged exit.
   3. Ceiling: Suspended type, fluorescent lighting with translucent diffuser mounted in a metal frame.
   5. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic sliding guides.
      a. Door Finish: Stainless steel panels: No. 4 brushed finish.
      b. Cab Sills: Extruded aluminum, mill finish.
   6. Handrail: Provide 1.5" diameter cylindrical metal on side and rear walls on front opening cars and side walls only on front and rear opening cars. Handrails shall have a stainless steel, no. 4 brushed finish.
   7. Ventilation: Manufacturer’s standard exhaust fan, mounted on the car top.

B. Car Top Inspection: Provide a car top inspection station with an “Auto-Inspection” switch, an "emergency stop" switch, and constant pressure "up and down" direction and safety buttons to make the normal operating devices inoperative. The station will give the inspector complete control of the elevator. The car top inspection station shall be mounted in the door operator assembly.

2.07 DOOR OPERATION

A. Door Operation: Provide a direct current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. Door movements shall be electrically cushioned at both limits of travel and the door operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. Closed-loop, microprocessor controlled motor-driven linear door operator, with adjustable torque limits, also acceptable. AC controlled units with oil checks or other deviations are not acceptable.
   1. No Un-Necessary Door Operation: The car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as a dispatch car.
   2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.
   3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel will reverse and the door will reopen to answer the other call.
   4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door closing is prevented for a field programmable time, a buzzer will sound. When the obstruction is removed, the door will begin to close at reduced speed. If the infra-red door protection system detects a person or object while closing on nudging, the doors will stop and resume closing only after the obstruction has been removed.
5. Limited Door Reversal: If the doors are closing and the infra-red beam(s) is interrupted, the doors will reverse and reopen partially. After the obstruction is cleared, the doors will begin to close.

6. Door Open Watchdog: If the doors are opening, but do not fully open after a field adjustable time, the doors will recycle closed then attempt to open six times to try and correct the fault.

7. Door Close Watchdog: If the doors are closing, but do not fully close after a field adjustable time, the doors will recycle open then attempt to close six times to try and correct the fault.

8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.

B. Door Protection Devices: Provide a door protection system using 150 or more microprocessor controlled infra-red light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen.

2.08 CAR OPERATING STATION

A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in an integral swing return panel requiring no applied faceplate. Swing return shall have a brushed stainless steel finish. The main car operating panel shall be mounted in the return and comply with handicap requirements. Pushbuttons that illuminate using long lasting LED's shall be included for each floor served, and emergency buttons and switches shall be provided per code. Switches for car light and accessories shall be provided.

B. Emergency Communications System: Integral phone system provided.

C. Auxiliary Operating Panel: Not Required

D. Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close.

E. Special Equipment: Not Applicable

2.09 CONTROL SYSTEMS

A. Controller: Shall be integrated in a hoistway entrance jamb. Should be microprocessor based, software oriented and protected from environmental extremes and excessive vibrations in a NEMA 1 enclosure. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.

B. Service Panel – to be located outside the hoistway in the controller entrance jamb and shall provide the following functionality/features:
   1. Access to main control board and CPU
   2. Main controller diagnostics
   3. Main controller fuses
   4. Universal Interface Tool (UIT)
   5. Remote valve adjustment
   6. Electronic motor starter adjustment and diagnostics
   7. Operation of pit motorized shut-off valve with LED feedback to the state of the valve in the pit
   8. Operation of auxiliary pump/motor (secondary hydraulic power source)
   9. Operation of electrical assisted manual lowering
   10. Provide male plug to supply 110VAC into the controller
   11. Run/Stop button

C. Automatic Light and Fan shut down: The control system shall evaluate the system activity and
automatically turn off the cab lighting and ventilation fan during periods of inactivity. The settings shall be field programmable.

D. Special Operation: Not Applicable

E. Emergency Power Operation: (Battery Lowering 10-DOC) When the loss of normal power is detected, a battery lowering feature is to be activated. The elevator will lower to a predetermined level and open the doors. After passengers have exited the car, the doors will close and the car will shutdown. When normal power becomes available, the elevator will automatically resume operation. The battery lowering feature is included in the elevator contract and does not utilize a building-supplied standby power source.

2.10 HALL STATIONS

A. Hall Stations, General: Vandal resistant buttons with center jewels which illuminate to indicate that a call has been registered at that floor for the indicated direction. Each button shall be provided with an internal automatic stop to prevent damage of switches that register the call. Provide 1 set of pushbutton risers. All fixtures shall be vandal resistant type.

   1. Phase 1 firefighter’s service key switch, with instructions, shall be incorporated into the hall station at the designated level.

B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.

C. Hall Position Indicator: Not Applicable

D. Hall lanterns: Not Applicable

E. Special Equipment: Not Applicable

2.11 MISCELLANEOUS ELEVATOR COMPONENTS

A. Oil Hydraulic Silencer: Install multiple oil hydraulic silencers (muffler device) at the power unit location. The silencers shall contain pulsation absorbing material inserted in a blowout proof housing.

B. Lockable three phase circuit breaker with auxiliary contact with shunt trip capability to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb and should be sized according to the National Electrical Code.

C. Lockable single phase 110V circuit breaker for cab light and fan to be provided. Circuit breaker to be located behind locked panel (Group 2 security access) at controller landing entrance jamb should be sized according to the National Electrical Code.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and control space, as constructed and verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 INSTALLATION

A. Install elevator systems components and coordinate installation of hoistway wall construction.
1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer's installation instructions and approved shop drawings.

2. Comply with the National Electrical Code for electrical work required during installation.

B. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.

C. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing.

D. Lubricate operating parts of system where recommended by manufacturer.

3.03 FIELD QUALITY CONTROL

A. Acceptance testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required by A17.1 Code and local authorities having jurisdiction. Perform other tests, if any, as required by governing regulations or agencies.

B. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.

3.04 ADJUSTING

A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

3.05 CLEANING

A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided. Stainless stall shall be cleaned with soap and water and dried with a non-abrasive surface; shall not be cleaned with bleached-based cleansers.

B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.

1. Use environmentally preferable and low VOC emitting cleaners for each application type. Cleaners that contain solvents, pine and/or citrus oils are not permitted.

3.06 PROTECTION

A. At time of Substantial Completion of elevator work, or portion thereof, provide suitable protective coverings, barriers, devices, signs, or other such methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

3.07 DEMONSTRATION

A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.

B. Make a final check of each elevator operation, with Owner's personnel present, immediately before date of substantial completion. Determine that control systems and operating devices are functioning properly.

3.08 ELEVATOR SCHEDULE

A. Elevator Qty. 1

1. Elevator Model: enduraMRL Above-Ground (2-Stage)

2. Rated Capacity: 3500 lbs.
3. Rated Speed: 110 ft./min.
4. Operation System: TAC32
5. Travel: 14'-8"
6. Landings: 2 total
7. Openings:
   a. Front: 2
   b. Rear: 0
8. Clear Car Inside: 6' - 8" wide x 5' - 5" deep
9. Cab Height: 8'-0" nominal
10. Hoistway Entrance Size: 3' - 6" wide x 7'-0" high
11. Door Type: Single Speed
13. Seismic Requirements: Zone 1
14. Fixture & Button Style: Vandal Resistant Signal Fixtures
15. Special Operations: None

END OF SECTION