

PROJECT MANUAL FOR THE NEW

STATE BANK OF SOUTHERN UTAH GUNNISON BRANCH

LOCATED IN

GUNNISON, UTAH



State Bank[®]
OF SOUTHERN UTAH

**SECTION 00 0104
PROJECT DIRECTORY**

OWNER: STATE BANK OF SOUTHERN UTAH
ATTENTION: MR. ERIC J. SCHMUTZ
377 NORTH MAIN STREET
CEDAR CITY, UTAH 84721
(435) 865-2371

ARCHITECT: NAYLOR WENTWORTH LUND ARCHITECTS, P.C
ATTENTION: MR. JARED ADAMS
163 WEST 1600 SOUTH, SUITE 1
ST. GEORGE, UTAH 84770
(435) 656-2883

STRUCTURAL ENGINEER: JONES & DEMILLE ENGINEERING, INC.
ATTENTION: MR. KENDRICK THOMAS, P.E., S.E.
1535 SOUTH 100 WEST
RICHFIELD, UTAH 84701
(435) 896-8266

MECHANICAL ENGINEER: VAN BOERUM & FRANK ASSOCIATES, INC.
ATTENTION: MR. LADD BIRCH
230 NORTH 1680 EAST, BUILDING V
ST. GEORGE, UTAH 84770
(435) 674-4800

ELECTRICAL ENGINEER: VAN BOERUM & FRANK ASSOCIATES, INC.
ATTENTION: MR. CLAYTON MABEY
230 NORTH 1680 EAST, BUILDING V
ST. GEORGE, UTAH 84770
(435) 674-4800

SURVEYOR AND CIVIL ENGINEER: JONES & DEMILLE ENGINEERING, INC.
ATTENTION: MR. KENDRICK THOMAS, P.E., S.E.
1535 SOUTH 100 WEST
RICHFIELD, UTAH 84701
(435) 896-8266

END OF SECTION 00 01 04

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**SECTION 00 1000
INVITATION TO SUBMIT PROPOSAL**

1.01 COMPLETED PROPOSAL FORMS ARE DUE AT OR BEFORE 2:00 P.M. ON JULY 20, 2021

- A. Complete the Proposal Response Form bound in Section 00 4100.
- B. **Completed proposal forms will be received on behalf of State Bank of Southern Utah by Naylor Wentworth Lund Architects and shall be emailed to the following:**
 - 1. Terance White: terance@nwlarchitects.com
 - 2. Jared Adams: jared@nwlarchitects.com

For proposed construction of the new

**STATE BANK OF SOUTHERN UTAH - GUNNISON BRANCH
GUNNISON, UTAH**

To be constructed in accordance with construction documents prepared by:

**NAYLOR WENTWORTH LUND ARCHITECTS, P.C.
163 WEST 1600 SOUTH, SUITE 1
ST. GEORGE, UTAH 84770
(435) 656-2883**

1.02 PROJECT: SHALL CONSIST, IN GENERAL, OF THE FOLLOWING:

- A. All utility extensions to the site and water run-off appurtenances.
- B. Final grading, concrete sidewalks, paving, etc. are included in this Contract.
- C. Building construction consists of, but not necessarily limited to:
- D. concrete slab on grade
- E. unit masonry walls
- F. steel framed structural system
- G. wood stud framing and prefabricated wood roof trusses at outdoor pavillion
- H. metal stud framing and gypsum board assemblies
- I. exterior brick veneer
- J. steel joist roof structure
- K. single-ply roofing system
- L. mechanical, plumbing and electrical systems

1.03 PERFORMANCE AND PAYMENT BONDS

- A. The successful proposer may be required to furnish to the Owner the following:
 - 1. Performance Bond and Payment Bond in a form acceptable to the Owner; and in the amount of 100% of the contract price.

1.04 CONTRACTOR'S INSURANCE

- A. Certificates of Insurance acceptable to the Owner shall be filed with the Owner prior to commencement of the Work. These certificates and the insurance policies required by this paragraph shall contain a provision that coverages afforded under the policies will not be

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canceled or allowed to expire until at least thirty (30) days after prior written notice has been given to the Owner. If any of the foregoing insurance coverages are required to remain in force after final payment and are reasonably available, an additional certificate evidencing continuation of such coverage shall be submitted with the final Application for Payment. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

- B. The insurance policy shall hold harmless the Owner and the Architect.
- C. Subcontractors shall maintain workers compensation insurance, unemployment insurance, general liability, automobile, and umbrella insurance for the minimum amount required by the Prime Contract. Insurance certificates shall be provided. Attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement that is part of the Subcontractor's Commercial General Liability Policy. These certificates and the insurance policies shall contain a provision that coverage afforded under the policies will not be cancelled or allowed to expire until 30 days prior written notice has been given to CM/GC. The Owner, Architect, Engineer and CM/GC shall be named as an additional insured on a primary and non-contributory basis on all liability and excess policies.

1.05 COMPLETION TIME:

- A. Each contractor agrees to complete his scope of the work as per the schedule to be agreed upon by the Owner and the Contractor.
- B. It is agreed by the parties to the Contract that if the Contractor shall fail to complete his work on or before the dates set for Substantial Completion, or extension thereof granted by the Owner, damage will be sustained by the Owner and that it is, and will be, impracticable and extremely difficult to fix the actual damage which the Owner will sustain in the event of and by reason of such delays. It is, therefore, agreed that the Contractor will pay the Owner liquidated damages in the sum of Five Hundred Dollars (\$500.00) per calendar day for each day the Contractor shall be in default. The Contractor agrees that any sums which may be due the Owner as liquidated damages, may be deducted from any monies due, or to become due, the Contractor under the Contract or may be collected from the Contractor's surety.

1.06 CONSTRUCTION DOCUMENTS: THESE CAN BE OBTAINED FROM THE OFFICE OF:

- A. These can be obtained from the office of:

**NAYLOR WENTWORTH LUND ARCHITECTS, P.C.
163 WEST 1600 SOUTH, SUITE 1
ST. GEORGE, UTAH 84770**

END OF SECTION 00 10 00

**SECTION 00 4100
PROPOSAL RESPONSE FORM**

PROJECT: STATE BANK OF SOUTHERN UTAH - GUNNISON BRANCH

COMPLETED PROPOSAL RESPONSE FORM DUE ON OR BEFORE JULY 20, 2021

1.01 TO:

- A. Owner: State Bank of Southern Utah
 - 1. Received in behalf of the Owner by the Architect.
 - a. Email completed form to Naylor Wentworth Lund Architects at the following email addresses:
 - 1) terance@nwlarchitects.com
 - 2) jared@nwlarchitects.com

1.02 SUBMITTED BY: (PROPOSER TO ENTER NAME AND ADDRESS)

- A. Proposer's Company/Firm Name _____
 - 1. Address _____
 - 2. City, State, Zip _____
 - 3. Utah License No. _____

1.03 PROPOSAL

A. General Contractors Fee

- 1. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Bid Documents prepared by Naylor Wentworth Lund Architects for the above mentioned project, we, the undersigned, hereby propose the following as our fee for the project: _____ percent (____ %) of the cost of construction as allowed in the Form of Agreement bound in Section 05 2000.

B. Estimate of the Cost of the Work

- 1. Having examined the Place of The Work and all matters referred to in the Instructions to Bidders and the Bid Documents prepared by Naylor Wentworth Lund Architects for the above mentioned project, we, the undersigned, hereby submit the following estimate for the cost of the work:
 - 2. _____ dollars
(\$ _____), in lawful money of the United States of America.
 - a. It is understood by the parties that the above estimate
 - 1) Is not the final price for the project, but is submitted here for consideration only.
 - 2) Will become the basis of the initial payment application for the project and that it will be adjusted from time to time as subcontractor bids are received for the project.
 - 3) Includes consideration of the requirements in Articles 7 & 8 of the attached Form of Agreement bound in Section 05 2000.

C. Contract Time

- 1. If this Proposal is accepted, we will:
 - a. Begin work within _____ days from Notice to Proceed (Proposer to enter number of days).
 - b. Complete the work within _____ months of starting (Proposer to enter number of months).

1.04 PROPOSAL FORM SIGNATURE(S)

- A. _____
- B. (Proposer - print the full name of your firm)
- C. _____
- D. (Authorized signing officer, Title)

END OF SECTION

**SECTION 00 4325
PRODUCT SUBSTITUTIONS**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling requests for substitutions made prior to bid. **Substitution requests received within (seven) 7 days before and anytime after the bid will not be considered.**
- B. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section 01 3300 - Submittals.
- C. Standards: Refer to Section 01 4219 - Reference Standards and Definitions for applicability of industry standards to products specified.
- D. Procedural requirements governing the Contractor's selection of products and product options are included under Section 01 6000 - Materials and Equipment.

1.02 DEFINITIONS

- A. Definitions used in this Article are not intended to change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Requests for changes in products, materials, equipment, and methods of construction required by Contract Documents proposed by the Contractor prior to the bid are considered requests for "substitutions". The following are not considered substitutions:
 - 1. Revisions to Contract Documents requested by the Owner or Architect.
 - 2. Specified options of products and construction methods included in Contract Documents.
 - 3. The Contractor's determination of and compliance with governing regulations and orders issued by governing authorities.

1.03 SUBMITTALS

- A. Substitution Request Submittal: Requests for substitution will only be considered if received earlier than seven (7) days prior to the bid date. **Requests received within (seven) 7 days prior to the bid date will be returned by the Architect.**
 - 1. Submit three (3) copies of each request for substitution for consideration. Submit requests in the form and in accordance with procedures required for Change Order proposals.
 - 2. Identify the product, or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers. Provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Product Data, including Drawings and descriptions of products, fabrication and installation procedures.
 - b. Samples, where applicable or requested.
 - c. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements such as size, weight, durability, performance and visual effect.
 - d. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate Contractors that will become necessary to accommodate the proposed substitution.
 - e. A statement indicating the substitution's effect on the Contractor's Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Certification by the Contractor that the substitution proposed is equal to or better in every significant respect to that required by the Contract Documents, and that it will perform adequately in the application indicated. Include the Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of the failure of the substitution to perform adequately. In the absence of this certification, the Contractor's use of the proposed substitution in their Bid will be

taken as prima facie evidence of their acceptance of the conditions listed above.

3. Architect's Action: Within three (3) days prior to the bid date, the Architect will issue an addendum indicating which product substitutions are considered equal to those specified. Those products which are not considered equal by the Architect will be returned. The opinion of the Architect will be final.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 00 43 25

**SECTION 00 5200
AGREEMENT FORM**

PART 1 GENERAL

1.01 FORM OF AGREEMENT

1.02 THE AGREEMENT TO BE EXECUTED IS ATTACHED FOLLOWING THIS PAGE.

- A. AIA A103-2017 - Standard Form of Agreement Between Owner and Contractor
- B. AIA A103 Exhibit A-2017 - Insurance and Bonds

1.03 RELATED REQUIREMENTS

- A. Section 00 7200 - General Conditions.
- B. Section 00 7300 - Supplementary Conditions.
- C. Section 01 4216 - Definitions.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

 AIA[®] Document A103[™] – 2017***Standard Form of Agreement Between Owner and Contractor where the basis of payment is the Cost of the Work Plus a Fee without a Guaranteed Maximum Price***

AGREEMENT made as of the day of in the year
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

and the Contractor:
(Name, legal status, address and other information)

for the following Project:
(Name, location and detailed description)

SBSU Gunnison Branch

A new bank branch building that is loosely based on the Richfield Branch Building with the exception that this new building will be on only one level.

The Architect:
(Name, legal status, address and other information)

Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770
Telephone Number: (435) 656-2883

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A103[™]–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201[™]–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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EXHIBIT A INSURANCE AND BONDS

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. If anything in the other Contract Documents, other than a Modification, is inconsistent with this Agreement, this Agreement shall govern. An enumeration of the Contract Documents, other than a Modification, appears in Article 16.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 RELATIONSHIP OF THE PARTIES

The Contractor accepts the relationship of trust and confidence established by this Agreement and covenants with the Owner to cooperate with the Architect and exercise the Contractor's skill and judgment in furthering the interests of the Owner; to furnish efficient business administration and supervision; to furnish at all times an adequate supply of workers and materials; and to perform the Work in an expeditious and economical manner consistent with the Owner's

interests. The Owner agrees to furnish and approve, in a timely manner, information required by the Contractor and to make payments to the Contractor in accordance with the requirements of the Contract Documents.

ARTICLE 4 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 4.1 The date of commencement of the Work shall be:

(Check one of the following boxes.)

- ☐ The date of this Agreement.
- ☐ A date set forth in a notice to proceed issued by the Owner.
- ☐ Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 4.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 4.3 Substantial Completion

§ 4.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:

(Check one of the following boxes and complete the necessary information.)

- ☐ Not later than () calendar days from the date of commencement of the Work.
- ☐ By the following date:

§ 4.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work

Substantial Completion Date

§ 4.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 4.3, liquidated damages, if any, shall be assessed as set forth in Section 5.1.6.

ARTICLE 5 CONTRACT SUM

§ 5.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum is the Cost of the Work as defined in Article 7 plus the Contractor's Fee.

§ 5.1.1 The Contractor's Fee:

(State a lump sum, percentage of Cost of the Work, or other provision for determining the Contractor's Fee.)

§ 5.1.2 The method of adjustment of the Contractor's Fee for changes in the Work:

§ 5.1.3 Limitations, if any, on a Subcontractor's overhead and profit for increases in the cost of its portion of the Work:

§ 5.1.4 Rental rates for Contractor-owned equipment shall not exceed percent (%) of the standard rental rate paid at the place of the Project.

§ 5.1.5 Unit prices, if any:

(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item

Units and Limitations

Price Per Unit (\$0.00)

§ 5.1.6 Liquidated damages, if any:

(Insert terms and conditions for liquidated damages, if any.)

§ 5.1.7 Other:

(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

§ 5.2 Control Estimate

§ 5.2.1 The Contractor shall prepare and submit to the Owner, in writing, a Control Estimate within 14 days of executing this Agreement. The Control Estimate shall include the estimated Cost of the Work plus the Contractor's Fee. The Control Estimate shall be used to monitor actual costs and the timely performance of the Work. The Contractor shall update the Control Estimate with each Application for Payment as needed to reflect changes in the Work.

§ 5.2.2 The Control Estimate shall include

- .1 the documents enumerated in Article 16, including all Modifications thereto;
- .2 a list of the assumptions made by the Contractor in the preparation of the Control Estimate, including assumptions under Section 5.2.4, to supplement the information provided by the Owner and contained in the Contract Documents;
- .3 a statement of the estimated Cost of the Work organized by trade categories or systems and the Contractor's Fee;
- .4 a project schedule upon which the Control Estimate is based, indicating proposed Subcontractors, activity sequences and durations, milestone dates for receipt and approval of pertinent information, schedule of shop drawings and samples, procurement and delivery of materials or equipment, and the Owner's occupancy requirements; and
- .5 contingencies for further development of design and construction, as required by Section 5.2.4.

§ 5.2.3 The Contractor shall meet with the Owner and Architect to review the Control Estimate. In the event that the Owner or Architect discovers any inconsistencies or inaccuracies in the information presented, they shall promptly notify the Contractor, who shall make appropriate adjustments to the Control Estimate. When the Control Estimate is acceptable to the Owner, the Owner shall acknowledge it in writing. The Owner's acceptance of the Control Estimate does not imply that the Control Estimate constitutes a Guaranteed Maximum Price.

§ 5.2.4 To the extent that the Contract Documents are anticipated to require further development, the Contractor shall provide in the Control Estimate for such further development consistent with the Contract Documents and reasonably inferable therefrom. Such further development does not include changes in scope, systems, kinds and quality of materials, finishes or equipment, all of which, if required, shall be incorporated in a revised Control Estimate by mutual agreement of the parties.

§ 5.2.5 The Contractor shall develop and implement a detailed system of cost control that will provide the Owner and Architect with timely information as to the anticipated total Cost of the Work. The cost control system shall compare the Control Estimate with the actual cost for activities in progress and estimates for uncompleted tasks and proposed changes. This information shall be reported to the Owner, in writing, no later than the Contractor's first Application for Payment and shall be revised and submitted with each Application for Payment.

§ 5.2.6 The Owner shall authorize preparation of revisions to the Contract Documents that incorporate the agreed-upon assumptions contained in the Control Estimate. The Owner shall promptly furnish such revised Contract Documents to the Contractor. The Contractor shall notify the Owner and Architect of any inconsistencies between the Control Estimate and the revised Contract Documents.

ARTICLE 6 CHANGES IN THE WORK

§ 6.1 The Owner may, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions or other revisions. The Owner shall issue such changes in writing. The Architect may make minor changes in the Work as provided in Article 7 of AIA Document A201™–2017, General Conditions of the Contract for Construction. The Contractor shall be entitled to an equitable adjustment in the Contract Time as a result of changes in the Work. The Contractor shall incorporate all changes in the Work and Contract Time as separate entries in the Control Estimate.

§ 6.2 Increased costs for the items set forth in Article 7 which result from changes in the Work shall become part of the Cost of the Work, and the Contractor's Fee shall be adjusted as provided in Article 5.

§ 6.3 If the Contractor receives any drawings, specifications, interpretations or instructions from the Owner or Architect which are inconsistent with the Contract Documents, or encounters unanticipated conditions, any of which will result in a significant change in the Cost of the Work or estimated date of Substantial Completion in comparison with the Control Estimate, the Contractor shall promptly notify the Owner and Architect in writing and shall not proceed with the affected Work until the Contractor receives further written instructions from the Owner and Architect.

§ 6.4 If no specific provision is made in Article 5 for adjustment of the Contractor's Fee in the case of changes in the Work, or if the extent of changes is such, in the aggregate, that application of the adjustment provisions of Article 5 will cause substantial inequity to the Owner or Contractor, the Contractor's Fee shall be equitably adjusted on the same basis that was used to establish the Fee for the original Work.

ARTICLE 7 COSTS TO BE REIMBURSED

§ 7.1 Cost of the Work

§ 7.1.1 The term Cost of the Work shall mean costs necessarily incurred by the Contractor in the proper performance of the Work. The Cost of the Work shall include only the items set forth in this Article 7.

§ 7.1.2 Where, pursuant to the Contract Documents, any cost is subject to the Owner's prior approval, the Contractor shall obtain such approval in writing prior to incurring the cost.

§ 7.1.3 Costs shall be at rates not higher than the standard paid at the place of the Project, except with prior approval of the Owner.

§ 7.2 Labor Costs

§ 7.2.1 Wages or salaries of construction workers directly employed by the Contractor to perform the construction of the Work at the site or, with the Owner's prior approval, at off-site workshops.

§ 7.2.2 Wages or salaries of the Contractor's supervisory and administrative personnel when stationed at the site and performing Work, with the Owner's prior approval.

§ 7.2.2.1 Wages or salaries of the Contractor's supervisory and administrative personnel when performing Work and stationed at a location other than the site, but only for that portion of time required for the Work, and limited to the personnel and activities listed below:

(Identify the personnel, type of activity and, if applicable, any agreed upon percentage of time to be devoted to the Work.)

§ 7.2.3 Wages or salaries of the Contractor's supervisory or administrative personnel engaged at factories, workshops or while traveling, in expediting the production or transportation of materials or equipment required for the Work, but only for that portion of their time required for the Work.

§ 7.2.4 Costs paid or incurred by the Contractor, as required by law or collective bargaining agreements, for taxes, insurance, contributions, assessments, and benefits and, for personnel not covered by collective bargaining agreements, customary benefits such as sick leave, medical and health benefits, holidays, vacations and pensions, provided such costs are based on wages and salaries included in the Cost of the Work under Sections 7.2.1 through 7.2.3.

§ 7.2.5 If agreed rates for labor costs, in lieu of actual costs, are provided in this Agreement, the rates shall remain unchanged throughout the duration of this Agreement, unless the parties execute a Modification.

§ 7.3 Subcontract Costs

Payments made by the Contractor to Subcontractors in accordance with the requirements of the subcontracts and this Agreement.

§ 7.4 Costs of Materials and Equipment Incorporated in the Completed Construction

§ 7.4.1 Costs, including transportation and storage at the site, of materials and equipment incorporated, or to be incorporated in the completed construction.

§ 7.4.2 Costs of materials described in the preceding Section 7.4.1 in excess of those actually installed to allow for reasonable waste and spoilage. Unused excess materials, if any, shall become the Owner's property at the completion of the Work or, at the Owner's option, shall be sold by the Contractor. Any amounts realized from such sales shall be credited to the Owner as a deduction from the Cost of the Work.

§ 7.5 Costs of Other Materials and Equipment, Temporary Facilities and Related Items

§ 7.5.1 Costs of transportation, storage, installation, dismantling, maintenance, and removal of materials, supplies, temporary facilities, machinery, equipment and hand tools not customarily owned by construction workers that are provided by the Contractor at the site and fully consumed in the performance of the Work. Costs of materials, supplies, temporary facilities, machinery, equipment, and tools, that are not fully consumed, shall be based on the cost or value of the item at the time it is first used on the Project site less the value of the item when it is no longer used at the Project site. Costs for items not fully consumed by the Contractor shall mean fair market value.

§ 7.5.2 Rental charges for temporary facilities, machinery, equipment, and hand tools not customarily owned by construction workers that are provided by the Contractor at the site and the costs of transportation, installation, dismantling, minor repairs, and removal of such temporary facilities, machinery, equipment, and hand tools. Rates and quantities of equipment owned by the Contractor, or a related party as defined in Section 7.8, shall be subject to the Owner's prior approval. The total rental cost of any such equipment may not exceed the purchase price of a comparable item.

§ 7.5.3 Costs of removal of debris from the site of the Work and its proper and legal disposal.

§ 7.5.4 Costs of the Contractor's site office, including general office equipment and supplies.

§ 7.5.5 Costs of materials and equipment suitably stored off the site at a mutually acceptable location, subject to the Owner's prior approval.

§ 7.6 Miscellaneous Costs

§ 7.6.1 Premiums for that portion of insurance and bonds required by the Contract Documents that can be directly attributed to this Contract.

§ 7.6.1.1 Costs for self-insurance, for either full or partial amounts of the coverages required by the Contract Documents, with the Owner's prior approval.

§ 7.6.1.2 Costs for insurance through a captive insurer owned or controlled by the Contractor, with the Owner's prior approval.

§ 7.6.2 Sales, use, or similar taxes, imposed by a governmental authority, that are related to the Work and for which the Contractor is liable.

§ 7.6.3 Fees and assessments for the building permit, and for other permits, licenses, and inspections, for which the Contractor is required by the Contract Documents to pay.

§ 7.6.4 Fees of laboratories for tests required by the Contract Documents; except those related to defective or nonconforming Work for which reimbursement is excluded under Article 13 of AIA Document A201–2017 or by other provisions of the Contract Documents, and which do not fall within the scope of Section 7.7.3.

§ 7.6.5 Royalties and license fees paid for the use of a particular design, process, or product, required by the Contract Documents.

§ 7.6.5.1 The cost of defending suits or claims for infringement of patent rights arising from requirements of the Contract Documents, payments made in accordance with legal judgments against the Contractor resulting from such suits or claims, and payments of settlements made with the Owner's consent, unless the Contractor had reason to believe that the required design, process, or product was an infringement of a copyright or a patent, and the Contractor failed to promptly furnish such information to the Architect as required by Article 3 of AIA Document A201–2017. The costs of legal defenses, judgments, and settlements shall not be included in the Cost of the Work used to calculate the Contractor's Fee.

§ 7.6.6 Costs for communications services, electronic equipment, and software, directly related to the Work and located at the site, with the Owner's prior approval.

§ 7.6.7 Costs of document reproductions and delivery charges.

§ 7.6.8 Deposits lost for causes other than the Contractor's negligence or failure to fulfill a specific responsibility in the Contract Documents.

§ 7.6.9 Legal, mediation and arbitration costs, including attorneys' fees, other than those arising from disputes between the Owner and Contractor, reasonably incurred by the Contractor after the execution of this Agreement in the performance of the Work and with the Owner's prior approval, which shall not be unreasonably withheld.

§ 7.6.10 Expenses incurred in accordance with the Contractor's standard written personnel policy for relocation and temporary living allowances of the Contractor's personnel required for the Work, with the Owner's prior approval.

§ 7.6.11 That portion of the reasonable expenses of the Contractor's supervisory or administrative personnel incurred while traveling in discharge of duties connected with the Work.

§ 7.7 Other Costs and Emergencies

§ 7.7.1 Other costs incurred in the performance of the Work, with the Owner's prior approval.

§ 7.7.2 Costs incurred in taking action to prevent threatened damage, injury, or loss, in case of an emergency affecting the safety of persons and property, as provided in Article 10 of AIA Document A201–2017.

§ 7.7.3 Costs of repairing or correcting damaged or nonconforming Work executed by the Contractor, Subcontractors, or suppliers, provided that such damaged or nonconforming Work was not caused by negligence of, or failure to fulfill a specific responsibility by, the Contractor, and only to the extent that the cost of repair or correction is not recovered by the Contractor from insurance, sureties, Subcontractors, suppliers, or others.

§ 7.8 Related Party Transactions

§ 7.8.1 For purposes of Section 7.8, the term "related party" shall mean (1) a parent, subsidiary, affiliate, or other entity having common ownership of, or sharing common management with, the Contractor; (2) any entity in which any stockholder in, or management employee of, the Contractor holds an equity interest in excess of ten percent in the aggregate; (3) any entity which has the right to control the business or affairs of the Contractor; and (4) any person, or any member of the immediate family of any person, who has the right to control the business or affairs of the Contractor.

§ 7.8.2 If any of the costs to be reimbursed arise from a transaction between the Contractor and a related party, the Contractor shall notify the Owner of the specific nature of the contemplated transaction, including the identity of the related party and the anticipated cost to be incurred, before any such transaction is consummated or cost incurred. If the Owner, after such notification, authorizes the proposed transaction in writing, then the cost incurred shall be included as a cost to be reimbursed, and the Contractor shall procure the Work, equipment, goods, or service, from the related party, as a Subcontractor, according to the terms of Article 10. If the Owner fails to authorize the transaction in writing, the Contractor shall procure the Work, equipment, goods, or service from some person or entity other than a related party according to the terms of Article 10.

ARTICLE 8 COSTS NOT TO BE REIMBURSED

§ 8.1 The Cost of the Work shall not include the items listed below:

- .1 Salaries and other compensation of the Contractor's personnel stationed at the Contractor's principal office or offices other than the site office, except as specifically provided in Section 7.2, or as may be provided in Article 15;
- .2 Bonuses, profit sharing, incentive compensation, and any other discretionary payments, paid to anyone hired by the Contractor or paid to any Subcontractor or vendor, unless the Owner has provided prior approval;
- .3 Expenses of the Contractor's principal office and offices other than the site office;
- .4 Overhead and general expenses, except as may be expressly included in Article 7;
- .5 The Contractor's capital expenses, including interest on the Contractor's capital employed for the Work;
- .6 Except as provided in Section 7.7.3 of this Agreement, costs due to the negligence of, or failure to fulfill a specific responsibility of the Contract by, the Contractor, Subcontractors, and suppliers, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable; and
- .7 Any cost not specifically and expressly described in Article 7.

ARTICLE 9 DISCOUNTS, REBATES AND REFUNDS

§ 9.1 Cash discounts obtained on payments made by the Contractor shall accrue to the Owner if (1) before making the payment, the Contractor included the amount to be paid, less such discount, in an Application for Payment and received payment from the Owner, or (2) the Owner has deposited funds with the Contractor with which to make payments; otherwise, cash discounts shall accrue to the Contractor. Trade discounts, rebates, refunds, and amounts received from sales of surplus materials, and equipment shall accrue to the Owner, and the Contractor shall make provisions so that they can be obtained.

§ 9.2 Amounts that accrue to the Owner in accordance with the provisions of Section 9.1 shall be credited to the Owner as a deduction from the Cost of the Work.

ARTICLE 10 SUBCONTRACTS AND OTHER AGREEMENTS

§ 10.1 Those portions of the Work that the Contractor does not customarily perform with the Contractor's own personnel shall be performed under subcontracts or other appropriate agreements with the Contractor. The Owner may designate specific persons from whom, or entities from which, the Contractor shall obtain bids. The Contractor shall obtain bids from Subcontractors, and from suppliers of materials or equipment fabricated especially for the Work, who are qualified to perform that portion of the Work in accordance with the requirements of the Contract Documents. The Contractor shall deliver such bids to the Architect and Owner with an indication as to which bids the Contractor intends to accept. The Owner then has the right to review the Contractor's list of proposed subcontractors and suppliers in consultation with the Architect and to object to any subcontractor or supplier. Any advice of the Architect, or approval or objection by the Owner, shall not relieve the Contractor of its responsibility to perform the Work in accordance with the Contract Documents. The Contractor shall not be required to contract with anyone to whom the Contractor has reasonable objection.

§ 10.2 Subcontracts or other agreements shall conform to the applicable payment provisions of this Agreement, and shall not be awarded on the basis of cost plus a fee without the Owner's prior written approval. If a subcontract is awarded on the basis of a cost-plus a fee, the Contractor shall provide in the subcontract for the Owner to receive the same audit rights with regard to the Subcontractor as the Owner receives with regard to the Contractor in Article 11.

§ 10.3 The Contractor shall prepare, for the Architect's review and the Owner's acceptance, a procurement schedule for items that must be ordered well in advance of construction. The Contractor shall expedite and coordinate the

ordering and delivery of materials that must be ordered well in advance of construction. If the Owner agrees to procure any items prior to the Owner's approval of the Control Estimate, the Owner shall procure the items on terms and conditions acceptable to the Contractor. Upon the Owner's approval of the Control Estimate, the Owner shall assign all contracts for these items to the Contractor and the Contractor shall thereafter accept responsibility for them.

ARTICLE 11 ACCOUNTING RECORDS

The Contractor shall keep full and detailed records and accounts related to the Cost of the Work, and exercise such controls, as may be necessary for proper financial management under this Contract and to substantiate all costs incurred. The accounting and control systems shall be satisfactory to the Owner. The Owner and the Owner's auditors shall, during regular business hours and upon reasonable notice, be afforded access to, and shall be permitted to audit and copy, the Contractor's records and accounts, including complete documentation supporting accounting entries, books, job cost reports, correspondence, instructions, drawings, receipts, subcontracts, Subcontractor's proposals, Subcontractor's invoices, purchase orders, vouchers, memoranda, and other data relating to this Contract. The Contractor shall preserve these records for a period of three years after final payment, or for such longer period as may be required by law.

ARTICLE 12 PAYMENTS

§ 12.1 Progress Payments

§ 12.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor, and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum, to the Contractor, as provided below and elsewhere in the Contract Documents.

§ 12.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

§ 12.1.3 Provided that an Application for Payment is received by the Architect not later than the day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the day of the month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than () days after the Architect receives the Application for Payment. *(Federal, state or local laws may require payment within a certain period of time.)*

§ 12.1.4 With each Application for Payment, the Contractor shall submit the cost control information required in Section 5.2.5 along with payrolls, petty cash accounts, receipted invoices, or invoices with check vouchers attached, and any other evidence required by the Owner or Architect to demonstrate that payments already made by the Contractor on account of the Cost of the Work equal or exceed progress payments already received by the Contractor plus payrolls for the period covered by the present Application for Payment, less that portion of the progress payments attributable to the Contractor's Fee.

§ 12.1.5 Applications for Payment shall show the Cost of the Work actually incurred by the Contractor through the end of the period covered by the Application for Payment and for which the Contractor has made or intends to make actual payment prior to the next Application for Payment.

§ 12.1.6 In accordance with AIA Document A201–2017 and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 12.1.6.1 The amount of each progress payment shall first include:

- .1 The Cost of the Work as described in Article 7;
- .2 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified; and
- .3 The Contractor's Fee computed upon the Cost of the Work described in the preceding Section 12.1.6.1.1 at the rate stated in Section 5.1.1; or if the Contractor's Fee is stated as a fixed sum in Section 5.1.1, an amount which bears the same ratio to that fixed-sum Fee as the Cost of the Work included in Section 12.1.6.1.1 bears to a reasonable estimate of the probable Cost of the Work upon its completion.

§ 12.1.6.2 The amount of each progress payment shall then be reduced by:

- .1 The aggregate of any amounts previously paid by the Owner;
- .2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;
- .3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;
- .4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017;
- .5 The shortfall, if any, indicated by the Contractor in the documentation required by Section 12.1.4 to substantiate prior Applications for Payment, or resulting from errors subsequently discovered by the Owner’s auditors in such documentation; and
- .6 Retainage withheld pursuant to Section 12.1.7.

§ 12.1.7 Retainage

§ 12.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:

(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

§ 12.1.7.1.1 The following items are not subject to retainage:

(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

§ 12.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:

(If the retainage established in Section 12.1.7.1 is to be modified prior to Substantial Completion of the entire Work, insert provisions for such modification.)

§ 12.1.7.3 Except as set forth in this Section 12.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 12.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:

(Insert any other conditions for release of retainage, such as upon completion of the Owner’s audit and reconciliation, upon Substantial Completion.)

§ 12.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, then the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 12.1.9 Except with the Owner’s prior written approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and suitably stored at the site.

§ 12.1.10 The Owner and the Contractor shall agree upon a mutually acceptable procedure for review and approval of payments to Subcontractors, and the percentage of retainage held on Subcontracts, and the Contractor shall execute subcontracts in accordance with those agreements.

§ 12.1.11 In taking action on the Contractor’s Applications for Payment, the Architect shall be entitled to rely on the accuracy and completeness of the information furnished by the Contractor, and such action shall not be deemed to be a representation that (1) the Architect has made a detailed examination, audit, or arithmetic verification, of the documentation submitted in accordance with Section 12.1.4 or other supporting data; (2) that the Architect has made exhaustive or continuous on-site inspections; or (3) that the Architect has made examinations to ascertain how or for

what purposes the Contractor has used amounts previously paid on account of the Contract. Such examinations, audits, and verifications, if required by the Owner, will be performed by the Owner's auditors acting in the sole interest of the Owner.

§ 12.2 Final Payment

§ 12.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract, except for the Contractor's responsibility to correct Work, as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment;
- .2 the Contractor has submitted a final accounting for the Cost of the Work and a final Application for Payment; and
- .3 a final Certificate for Payment has been issued by the Architect in accordance with Section 12.2.2.

§ 12.2.2 Within 30 days of the Owner's receipt of the Contractor's final accounting for the Cost of the Work, the Owner shall conduct an audit of the Cost of the Work or notify the Architect that it will not conduct an audit.

§ 12.2.2.1 If the Owner conducts an audit of the Cost of the Work, the Owner shall, within 10 days after completion of the audit, submit a written report based upon the auditor's findings to the Architect.

§ 12.2.2.2 Within seven days after receipt of the written report described in Section 12.2.2.1, or receipt of notice that the Owner will not conduct an audit, and provided that the other conditions of Section 12.2.1 have been met, the Architect will either issue to the Owner a final Certificate for Payment with a copy to the Contractor, or notify the Contractor and Owner in writing of the Architect's reasons for withholding a certificate as provided in Article 9 of AIA Document A201–2017. The time periods stated in this Section 12.2.2 supersede those stated in Article 9 of AIA Document A201–2017. The Architect is not responsible for verifying the accuracy of the Contractor's final accounting.

§ 12.2.2.3 If the Owner's auditors report concludes that the Cost of the Work, as substantiated by the Contractor's final accounting, is less than claimed by the Contractor, the Contractor shall be entitled to request mediation of the disputed amount without seeking an initial decision pursuant to Article 15 of AIA Document A201–2017. A request for mediation shall be made by the Contractor within 30 days after the Contractor's receipt of a copy of the Architect's final Certificate for Payment. Failure to request mediation within this 30-day period shall result in the substantiated amount reported by the Owner's auditors becoming binding on the Contractor. Pending a final resolution of the disputed amount, the Owner shall pay the Contractor the amount certified in the Architect's final Certificate for Payment.

§ 12.2.3 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

§ 12.2.4 If, subsequent to final payment, and at the Owner's request, the Contractor incurs costs, described in Article 7 and not excluded by Article 8 to correct defective or nonconforming Work, the Owner shall reimburse the Contractor for such costs, and the Contractor's Fee applicable thereto, on the same basis as if such costs had been incurred prior to final payment.

§ 12.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

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ARTICLE 13 DISPUTE RESOLUTION

§ 13.1 Initial Decision Maker

The Architect will serve as Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017 unless the parties appoint below another individual, not a party to the Agreement, to serve as Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

§ 13.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:

(Check the appropriate box.)

- ☐ Arbitration pursuant to Section 15 of AIA Document A201–2017
- ☐ Litigation in a court of competent jurisdiction
- ☐ Other *(Specify)*

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 14 TERMINATION OR SUSPENSION

§ 14.1 Termination

§ 14.1.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 14.1.2 Termination by the Owner for Cause

§ 14.1.2.1 If the Owner terminates the Contract for cause as provided in Article 14 of AIA Document A201–2017, the Owner shall then only pay the Contractor an amount calculated as follows:

- .1 Take the Cost of the Work incurred by the Contractor to the date of termination;
- .2 Add the Contractor's Fee computed upon the Cost of the Work to the date of termination at the rate stated in Section 5.1.1 or, if the Contractor's Fee is stated as a fixed sum in that Section, an amount that bears the same ratio to that fixed-sum Fee as the Cost of the Work at the time of termination bears to a reasonable estimate of the probable Cost of the Work upon its completion;
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract the costs and damages incurred, or to be incurred, by the Owner under Article 14 of AIA Document A201–2017.

§ 14.1.2.2 The Owner shall also pay the Contractor fair compensation, either by purchase or rental at the election of the Owner, for any equipment owned by the Contractor that the Owner elects to retain and that is not otherwise included in the Cost of the Work under Section 14.1.2.1.1. To the extent that the Owner elects to take legal assignment of subcontracts and purchase orders (including rental agreements), the Contractor shall, as a condition of receiving the payments referred to in this Article 14, execute and deliver all such papers and take all such steps, including the legal assignment of such subcontracts and other contractual rights of the Contractor, as the Owner may require for the purpose of fully vesting in the Owner the rights and benefits of the Contractor under such subcontracts or purchase orders.

§ 14.1.3 Termination by the Owner for Convenience

If the Owner terminates the Contract for convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of or method for determining the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

§ 14.2 Suspension

The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017; in such case, the Contract Sum and Contract Time shall be increased as provided in Article 14 of AIA Document A201–2017, except that the term "profit" shall be understood to mean the Contractor's Fee as described in Article 5 and Section 6.4 of this Agreement.

ARTICLE 15 MISCELLANEOUS PROVISIONS

§ 15.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 15.2 The Owner's representative:

(Name, address, email address and other information)

Eric Schmutz

§ 15.3 The Contractor's representative:

(Name, address, email address and other information)

§ 15.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 15.5 Insurance and Bonds

§ 15.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A103™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is the Cost of the Work Plus a Fee without a Guaranteed Maximum Price, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 15.5.2 The Contractor shall provide bonds as set forth in AIA Document A103–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 15.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or otherwise as set forth below:

(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

§ 15.7 Other provisions:

ARTICLE 16 ENUMERATION OF CONTRACT DOCUMENTS

§ 16.1 This Agreement is comprised of the following documents:

- .1 AIA Document A103™–2017, Standard Form of Agreement Between Owner and Contractor
- .2 AIA Document A103™–2017, Exhibit A, Insurance and Bonds
- .3 AIA Document A201™–2017, General Conditions of the Contract for Construction
- .4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

- .5 Drawings

Number	Title	Date

- .6 Specifications

Section	Title	Date	Pages

- .7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to proposal requirements are not part of the Contract Documents unless the proposal requirements are also enumerated in this Article 16.

- .8 Other Exhibits:
(Check all boxes that apply.)

☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

☐ The Sustainability Plan:

Title	Date	Pages

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

- .9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal

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requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

This Agreement entered into as of the day and year first written above.

OWNER *(Signature)*

Eric Schmutz, CEO

(Printed name and title)

CONTRACTOR *(Signature)*

(Printed name and title)

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User Notes:

(1849963891)

Additions and Deletions Report for

AIA[®] Document A103™ – 2017

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 13:48:19 ET on 06/24/2021.

PAGE 1

State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

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SBSU Gunnison Branch

...

A new bank branch building that is loosely based on the Richfield Branch Building with the exception that this new building will be on only one level.

...

Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770
Telephone Number: (435) 656-2883

PAGE 13

Eric Schmutz

PAGE 15

Eric Schmutz, CEO

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, _____, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 13:48:19 ET on 06/24/2021 under Order No. 4341937151 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A103™ – 2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is the Cost of the Work Plus a Fee without a Guaranteed Maximum Price, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)



AIA[®] Document A103[™] – 2017 Exhibit A

Insurance and Bonds

This Insurance and Bonds Exhibit is part of the Agreement, between the Owner and the Contractor, dated the day of in the year
(In words, indicate day, month and year.)

for the following **PROJECT**:
(Name and location or address)

SBSU Gunnison Branch

THE OWNER:
(Name, legal status and address)

State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

THE CONTRACTOR:
(Name, legal status and address)

TABLE OF ARTICLES

- A.1 GENERAL**
- A.2 OWNER'S INSURANCE**
- A.3 CONTRACTOR'S INSURANCE AND BONDS**
- A.4 SPECIAL TERMS AND CONDITIONS**

ARTICLE A.1 GENERAL

The Owner and Contractor shall purchase and maintain insurance, and provide bonds, as set forth in this Exhibit. As used in this Exhibit, the term General Conditions refers to AIA Document A201[™]–2017, General Conditions of the Contract for Construction.

ARTICLE A.2 OWNER'S INSURANCE

§ A.2.1 General

Prior to commencement of the Work, the Owner shall secure the insurance, and provide evidence of the coverage, required under this Article A.2 and, upon the Contractor's request, provide a copy of the property insurance policy or policies required by Section A.2.3. The copy of the policy or policies provided shall contain all applicable conditions, definitions, exclusions, and endorsements.

§ A.2.2 Liability Insurance

The Owner shall be responsible for purchasing and maintaining the Owner's usual general liability insurance.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document is intended to be used in conjunction with AIA Document A201[™]–2017, General Conditions of the Contract for Construction. Article 11 of A201[™]–2017 contains additional insurance provisions.

Init.

§ A.2.3 Required Property Insurance

§ A.2.3.1 Unless this obligation is placed on the Contractor pursuant to Section A.3.3.2.1, the Owner shall purchase and maintain, from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located, property insurance written on a builder's risk "all-risks" completed value or equivalent policy form and sufficient to cover the total value of the entire Project on a replacement cost basis. The Owner's property insurance coverage shall be no less than the amount of the initial Contract Sum, plus the value of subsequent Modifications and labor performed and materials or equipment supplied by others. The property insurance shall be maintained until Substantial Completion and thereafter as provided in Section A.2.3.1.3, unless otherwise provided in the Contract Documents or otherwise agreed in writing by the parties to this Agreement. This insurance shall include the interests of the Owner, Contractor, Subcontractors, and Sub-subcontractors in the Project as insureds. This insurance shall include the interests of mortgagees as loss payees.

§ A.2.3.1.1 **Causes of Loss.** The insurance required by this Section A.2.3.1 shall provide coverage for direct physical loss or damage, and shall not exclude the risks of fire, explosion, theft, vandalism, malicious mischief, collapse, earthquake, flood, or windstorm. The insurance shall also provide coverage for ensuing loss or resulting damage from error, omission, or deficiency in construction methods, design, specifications, workmanship, or materials. Sub-limits, if any, are as follows:

(Indicate below the cause of loss and any applicable sub-limit.)

Causes of Loss	Sub-Limit

§ A.2.3.1.2 **Specific Required Coverages.** The insurance required by this Section A.2.3.1 shall provide coverage for loss or damage to falsework and other temporary structures, and to building systems from testing and startup. The insurance shall also cover debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and reasonable compensation for the Architect's and Contractor's services and expenses required as a result of such insured loss, including claim preparation expenses. Sub-limits, if any, are as follows:

(Indicate below type of coverage and any applicable sub-limit for specific required coverages.)

Coverage	Sub-Limit

§ A.2.3.1.3 Unless the parties agree otherwise, upon Substantial Completion, the Owner shall continue the insurance required by Section A.2.3.1 or, if necessary, replace the insurance policy required under Section A.2.3.1 with property insurance written for the total value of the Project that shall remain in effect until expiration of the period for correction of the Work set forth in Section 12.2.2 of the General Conditions.

§ A.2.3.1.4 **Deductibles and Self-Insured Retentions.** If the insurance required by this Section A.2.3 is subject to deductibles or self-insured retentions, the Owner shall be responsible for all loss not covered because of such deductibles or retentions.

§ A.2.3.2 **Occupancy or Use Prior to Substantial Completion.** The Owner's occupancy or use of any completed or partially completed portion of the Work prior to Substantial Completion shall not commence until the insurance company or companies providing the insurance under Section A.2.3.1 have consented in writing to the continuance of coverage. The Owner and the Contractor shall take no action with respect to partial occupancy or use that would cause cancellation, lapse, or reduction of insurance, unless they agree otherwise in writing.

§ A.2.3.3 Insurance for Existing Structures

If the Work involves remodeling an existing structure or constructing an addition to an existing structure, the Owner shall purchase and maintain, until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, "all-risks" property insurance, on a replacement cost basis, protecting the existing structure against direct physical loss or damage from the causes of loss identified in Section A.2.3.1, notwithstanding the undertaking of the Work. The Owner shall be responsible for all co-insurance penalties.

§ A.2.4 Optional Extended Property Insurance.

The Owner shall purchase and maintain the insurance selected and described below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. For each type of insurance selected, indicate applicable limits of coverage or other conditions in the fill point below the selected item.)

- ☐ **§ A.2.4.1 Loss of Use, Business Interruption, and Delay in Completion Insurance**, to reimburse the Owner for loss of use of the Owner's property, or the inability to conduct normal operations due to a covered cause of loss.
- ☐ **§ A.2.4.2 Ordinance or Law Insurance**, for the reasonable and necessary costs to satisfy the minimum requirements of the enforcement of any law or ordinance regulating the demolition, construction, repair, replacement or use of the Project.
- ☐ **§ A.2.4.3 Expediting Cost Insurance**, for the reasonable and necessary costs for the temporary repair of damage to insured property, and to expedite the permanent repair or replacement of the damaged property.
- ☐ **§ A.2.4.4 Extra Expense Insurance**, to provide reimbursement of the reasonable and necessary excess costs incurred during the period of restoration or repair of the damaged property that are over and above the total costs that would normally have been incurred during the same period of time had no loss or damage occurred.
- ☐ **§ A.2.4.5 Civil Authority Insurance**, for losses or costs arising from an order of a civil authority prohibiting access to the Project, provided such order is the direct result of physical damage covered under the required property insurance.
- ☐ **§ A.2.4.6 Ingress/Egress Insurance**, for loss due to the necessary interruption of the insured's business due to physical prevention of ingress to, or egress from, the Project as a direct result of physical damage.
- ☐ **§ A.2.4.7 Soft Costs Insurance**, to reimburse the Owner for costs due to the delay of completion of the Work, arising out of physical loss or damage covered by the required property insurance: including construction loan fees; leasing and marketing expenses; additional fees, including those of architects, engineers, consultants, attorneys and accountants, needed for the completion of the construction, repairs, or reconstruction; and carrying costs such as property taxes, building permits, additional interest on loans, realty taxes, and insurance premiums over and above normal expenses.

§ A.2.5 Other Optional Insurance.

The Owner shall purchase and maintain the insurance selected below.

(Select the types of insurance the Owner is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance.)

Init.

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[] § A.2.5.1 **Cyber Security Insurance** for loss to the Owner due to data security and privacy breach, including costs of investigating a potential or actual breach of confidential or private information. *(Indicate applicable limits of coverage or other conditions in the fill point below.)*

[] § A.2.5.2 **Other Insurance**
(List below any other insurance coverage to be provided by the Owner and any applicable limits.)

Coverage

Limits

ARTICLE A.3 CONTRACTOR'S INSURANCE AND BONDS

§ A.3.1 General

§ A.3.1.1 Certificates of Insurance. The Contractor shall provide certificates of insurance acceptable to the Owner evidencing compliance with the requirements in this Article A.3 at the following times: (1) prior to commencement of the Work; (2) upon renewal or replacement of each required policy of insurance; and (3) upon the Owner's written request. An additional certificate evidencing continuation of commercial liability coverage, including coverage for completed operations, shall be submitted with the final Application for Payment and thereafter upon renewal or replacement of such coverage until the expiration of the periods required by Section A.3.2.1 and Section A.3.3.1. The certificates will show the Owner as an additional insured on the Contractor's Commercial General Liability and excess or umbrella liability policy or policies.

§ A.3.1.2 Deductibles and Self-Insured Retentions. The Contractor shall disclose to the Owner any deductible or self-insured retentions applicable to any insurance required to be provided by the Contractor.

§ A.3.1.3 Additional Insured Obligations. To the fullest extent permitted by law, the Contractor shall cause the commercial general liability coverage to include (1) the Owner, the Architect, and the Architect's consultants as additional insureds for claims caused in whole or in part by the Contractor's negligent acts or omissions during the Contractor's operations; and (2) the Owner as an additional insured for claims caused in whole or in part by the Contractor's negligent acts or omissions for which loss occurs during completed operations. The additional insured coverage shall be primary and non-contributory to any of the Owner's general liability insurance policies and shall apply to both ongoing and completed operations. To the extent commercially available, the additional insured coverage shall be no less than that provided by Insurance Services Office, Inc. (ISO) forms CG 20 10 07 04, CG 20 37 07 04, and, with respect to the Architect and the Architect's consultants, CG 20 32 07 04.

§ A.3.2 Contractor's Required Insurance Coverage

§ A.3.2.1 The Contractor shall purchase and maintain the following types and limits of insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:
(If the Contractor is required to maintain insurance for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.2.2 Commercial General Liability

§ A.3.2.2.1 Commercial General Liability insurance for the Project written on an occurrence form with policy limits of not less than (\$) each occurrence, (\$) general aggregate, and (\$) aggregate for products-completed operations hazard, providing coverage for claims including

- .1 damages because of bodily injury, sickness or disease, including occupational sickness or disease, and death of any person;
- .2 personal injury and advertising injury;
- .3 damages because of physical damage to or destruction of tangible property, including the loss of use of such property;

- .4 bodily injury or property damage arising out of completed operations; and
- .5 the Contractor's indemnity obligations under Section 3.18 of the General Conditions.

§ A.3.2.2.2 The Contractor's Commercial General Liability policy under this Section A.3.2.2 shall not contain an exclusion or restriction of coverage for the following:

- .1 Claims by one insured against another insured, if the exclusion or restriction is based solely on the fact that the claimant is an insured, and there would otherwise be coverage for the claim.
- .2 Claims for property damage to the Contractor's Work arising out of the products-completed operations hazard where the damaged Work or the Work out of which the damage arises was performed by a Subcontractor.
- .3 Claims for bodily injury other than to employees of the insured.
- .4 Claims for indemnity under Section 3.18 of the General Conditions arising out of injury to employees of the insured.
- .5 Claims or loss excluded under a prior work endorsement or other similar exclusionary language.
- .6 Claims or loss due to physical damage under a prior injury endorsement or similar exclusionary language.
- .7 Claims related to residential, multi-family, or other habitational projects, if the Work is to be performed on such a project.
- .8 Claims related to roofing, if the Work involves roofing.
- .9 Claims related to exterior insulation finish systems (EIFS), synthetic stucco or similar exterior coatings or surfaces, if the Work involves such coatings or surfaces.
- .10 Claims related to earth subsidence or movement, where the Work involves such hazards.
- .11 Claims related to explosion, collapse and underground hazards, where the Work involves such hazards.

§ A.3.2.3 Automobile Liability covering vehicles owned, and non-owned vehicles used, by the Contractor, with policy limits of not less than (\$) per accident, for bodily injury, death of any person, and property damage arising out of the ownership, maintenance and use of those motor vehicles along with any other statutorily required automobile coverage.

§ A.3.2.4 The Contractor may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess or umbrella liability insurance, provided such primary and excess or umbrella insurance policies result in the same or greater coverage as the coverages required under Section A.3.2.2 and A.3.2.3, and in no event shall any excess or umbrella liability insurance provide narrower coverage than the primary policy. The excess policy shall not require the exhaustion of the underlying limits only through the actual payment by the underlying insurers.

§ A.3.2.5 Workers' Compensation at statutory limits.

§ A.3.2.6 Employers' Liability with policy limits not less than (\$) each accident, (\$) each employee, and (\$) policy limit.

§ A.3.2.7 Jones Act, and the Longshore & Harbor Workers' Compensation Act, as required, if the Work involves hazards arising from work on or near navigable waterways, including vessels and docks

§ A.3.2.8 If the Contractor is required to furnish professional services as part of the Work, the Contractor shall procure Professional Liability insurance covering performance of the professional services, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.9 If the Work involves the transport, dissemination, use, or release of pollutants, the Contractor shall procure Pollution Liability insurance, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.10 Coverage under Sections A.3.2.8 and A.3.2.9 may be procured through a Combined Professional Liability and Pollution Liability insurance policy, with combined policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.11 Insurance for maritime liability risks associated with the operation of a vessel, if the Work requires such activities, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.2.12 Insurance for the use or operation of manned or unmanned aircraft, if the Work requires such activities, with policy limits of not less than (\$) per claim and (\$) in the aggregate.

§ A.3.3 Contractor's Other Insurance Coverage

§ A.3.3.1 Insurance selected and described in this Section A.3.3 shall be purchased from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Contractor shall maintain the required insurance until the expiration of the period for correction of Work as set forth in Section 12.2.2 of the General Conditions, unless a different duration is stated below:

(If the Contractor is required to maintain any of the types of insurance selected below for a duration other than the expiration of the period for correction of Work, state the duration.)

§ A.3.3.2 The Contractor shall purchase and maintain the following types and limits of insurance in accordance with Section A.3.3.1.

(Select the types of insurance the Contractor is required to purchase and maintain by placing an X in the box(es) next to the description(s) of selected insurance. Where policy limits are provided, include the policy limit in the appropriate fill point.)

[] § A.3.3.2.1 Property insurance of the same type and scope satisfying the requirements identified in Section A.2.3, which, if selected in this section A.3.3.2.1, relieves the Owner of the responsibility to purchase and maintain such insurance except insurance required by Section A.2.3.1.3 and Section A.2.3.3. The Contractor shall comply with all obligations of the Owner under Section A.2.3 except to the extent provided below. The Contractor shall disclose to the Owner the amount of any deductible, and the Owner shall be responsible for losses within the deductible. Upon request, the Contractor shall provide the Owner with a copy of the property insurance policy or policies required. The Owner shall adjust and settle the loss with the insurer and be the trustee of the proceeds of the property insurance in accordance with Article 11 of the General Conditions unless otherwise set forth below:

(Where the Contractor's obligation to provide property insurance differs from the Owner's obligations as described under Section A.2.3, indicate such differences in the space below. Additionally, if a party other than the Owner will be responsible for adjusting and settling a loss with the insurer and acting as the trustee of the proceeds of property insurance in accordance with Article 11 of the General Conditions, indicate the responsible party below.)

[] § A.3.3.2.2 Railroad Protective Liability Insurance, with policy limits of not less than (\$) per claim and (\$) in the aggregate, for Work within fifty (50) feet of railroad property.

[] § A.3.3.2.3 Asbestos Abatement Liability Insurance, with policy limits of not less than (\$) per claim and (\$) in the aggregate, for liability arising from the encapsulation, removal, handling, storage, transportation, and disposal of asbestos-containing materials.

[] § A.3.3.2.4 Insurance for physical damage to property while it is in storage and in transit to the construction site on an "all-risks" completed value form.

[] § A.3.3.2.5 Property insurance on an "all-risks" completed value form, covering property owned by the Contractor and used on the Project, including scaffolding and other equipment.

[] § A.3.3.2.6 Other Insurance

(List below any other insurance coverage to be provided by the Contractor and any applicable limits.)

Coverage

Limits

§ A.3.4 Performance Bond and Payment Bond

The Contractor shall provide surety bonds, from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located, as follows:

(Specify type and penal sum of bonds.)

Type

Penal Sum (\$0.00)

Payment Bond

Performance Bond

Payment and Performance Bonds shall be AIA Document A312™, Payment Bond and Performance Bond, or contain provisions identical to AIA Document A312™, current as of the date of this Agreement.

ARTICLE A.4 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Insurance and Bonds Exhibit, if any, are as follows:

Init.

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Additions and Deletions Report for

AIA[®] Document A103™ – 2017 Exhibit A

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

Note: This Additions and Deletions Report is provided for information purposes only and is not incorporated into or constitute any part of the associated AIA document. This Additions and Deletions Report and its associated document were generated simultaneously by AIA software at 13:55:38 ET on 06/24/2021.

PAGE 1

SBSU Gunnison Branch

...

State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

**SECTION 00 5500
NOTICE TO PROCEED**

Date: _____

Re: State Bank of Southern Utah - Gunnison Branch

A. To:

Contractor Name: _____

Contractor Address: _____

Contractor Telephone: _____

Contractor Utah DOPL #: _____

1. You are hereby notified to commence work on the above referenced project in accordance with the associated Contract Documents and the forthcoming Form of Agreement referenced therein.
2. As noted in the Contract Documents, you are to substantially complete the project as follows:
 - a. Substantial Completion Observation: (insert date) _____
and
 - b. Fire Marshal Final Observation: (insert date) _____
and
 - c. Final Acceptance Observation: (insert date) _____

B. From:

State Bank of Southern Utah

By: _____

Title: _____

Signature: _____

C. Receipt of this Notice to Proceed is acknowledged

By: _____

On behalf of: (insert firm name) _____

Title: _____

Signature: _____

AIA® Document G702® – 1992

Application and Certificate for Payment

TO OWNER: State Bank of Southern Utah 377 North Main Street P.O. Box 340 Cedar City, Utah 84721	PROJECT: SBSU Gunnison Branch VIA ARCHITECT: Naylor Wentworth Lund Architects 163 West 1600 South, Suite 1 St. George, UT 84770	APPLICATION NO: 001 PERIOD TO: CONTRACT FOR: General Construction CONTRACT DATE: PROJECT NOS: 520.004 / /	Distribution to: OWNER: ☐ ARCHITECT: ☐ CONTRACTOR: ☐ FIELD: ☐ OTHER: ☐
FROM CONTRACTOR:			

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703®, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM	\$0.00
2. NET CHANGE BY CHANGE ORDERS	\$0.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)	\$0.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$0.00
5. RETAINAGE:	
a. 0 % of Completed Work (Column D + E on G703)	\$0.00
b. 0 % of Stored Material (Column F on G703)	\$0.00
Total Retainage (Lines 5a + 5b or Total in Column I of G703)	\$0.00
6. TOTAL EARNED LESS RETAINAGE	\$0.00
(Line 4 Less Line 5 Total)	
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$0.00
(Line 6 from prior Certificate)	
8. CURRENT PAYMENT DUE	\$0.00
9. BALANCE TO FINISH, INCLUDING RETAINAGE	
(Line 3 less Line 6)	
	\$0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$0.00	\$0.00
Total approved this Month	\$0.00	\$0.00
TOTALS	\$0.00	\$0.00
NET CHANGES by Change Order		\$0.00

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:

By: _____ Date: _____

State of: _____

County of: _____

Subscribed and sworn to before
me this _____ day of _____

Notary Public:

My Commission expires: _____

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$0.00

(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT:

By: _____ Date: _____

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.



AIA Document G702®, Application and Certification for Payment, or G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
Use Column I on Contracts where variable retainage for line items may apply.

001

520.004

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User Notes: (3B9ADAB9)



AIA[®] Document G710[™] – 2017

Architect's Supplemental Instructions

PROJECT: *(name and address)*
SBSU Gunnison Branch

CONTRACT INFORMATION:
Contract For: General Construction
Date:

ASI INFORMATION:
ASI Number: 001
Date:

OWNER: *(name and address)*
State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

ARCHITECT: *(name and address)*
Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770

CONTRACTOR: *(name and address)*

The Contractor shall carry out the Work in accordance with the following supplemental instructions without change in Contract Sum or Contract Time. Proceeding with the Work in accordance with these instructions indicates your acknowledgment that there will be no change in the Contract Sum or Contract Time.
(Insert a detailed description of the Architect's supplemental instructions and, if applicable, attach or reference specific exhibits.)

ISSUED BY THE ARCHITECT:

Naylor Wentworth Lund Architects
ARCHITECT *(Firm name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE



AIA[®] Document G714[™] – 2017

Construction Change Directive

PROJECT: *(name and address)*
SBSU Gunnison Branch

CONTRACT INFORMATION:
Contract For: General Construction
Date:

CCD INFORMATION:
Directive Number: 001
Date:

OWNER: *(name and address)*
State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

ARCHITECT: *(name and address)*
Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770

CONTRACTOR: *(name and address)*

The Contractor is hereby directed to make the following change(s) in this Contract:
(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits.)

PROPOSED ADJUSTMENTS

1. The proposed basis of adjustment to the Contract Sum or Guaranteed Maximum Price is:

- ☒ Lump Sum decrease of \$0.00
- ☐ Unit Price of \$ per
- ☐ Cost, as defined below, plus the following fee:
(Insert a definition of, or method for determining, cost)

☐ As follows:

2. The Contract Time is proposed to remain unchanged. The proposed adjustment, if any, is (0 days).

NOTE: The Owner, Architect and Contractor should execute a Change Order to supersede this Construction Change Directive to the extent they agree upon adjustments to the Contract Sum, Contract Time, or Guaranteed Maximum price for the change(s) described herein.

When signed by the Owner and Architect and received by the Contractor, this document becomes effective IMMEDIATELY as a Construction Change Directive (CCD), and the Contractor shall proceed with the change(s) described above.

Contractor signature indicates agreement with the proposed adjustments in Contract Sum and Contract Time set forth in this CCD.

Naylor Wentworth Lund Architects
ARCHITECT *(Firm name)*

State Bank of Southern Utah
OWNER *(Firm name)*

CONTRACTOR *(Firm name)*

SIGNATURE

SIGNATURE

SIGNATURE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

PRINTED NAME AND TITLE

DATE

DATE

DATE



AIA®

Document G701™ – 2017

Change Order**PROJECT:** *(Name and address)*
SBSU Gunnison Branch**CONTRACT INFORMATION:**
Contract For: General Construction
Date:**CHANGE ORDER INFORMATION:**
Change Order Number: 001
Date:**OWNER:** *(Name and address)*
State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721**ARCHITECT:** *(Name and address)*
Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770**CONTRACTOR:** *(Name and address)***THE CONTRACT IS CHANGED AS FOLLOWS:***(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)*

The original Contract Sum was	\$	0.00
The net change by previously authorized Change Orders	\$	0.00
The Contract Sum prior to this Change Order was	\$	0.00
The Contract Sum will be increased by this Change Order in the amount of	\$	0.00
The new Contract Sum including this Change Order will be	\$	0.00

The Contract Time will be increased by Zero (0) days.

The new date of Substantial Completion will be

NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.**NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.**

Naylor Wentworth Lund Architects

ARCHITECT *(Firm name)***CONTRACTOR** *(Firm name)*

State Bank of Southern Utah

OWNER *(Firm name)***SIGNATURE****SIGNATURE****SIGNATURE****PRINTED NAME AND TITLE****PRINTED NAME AND TITLE**

Eric Schmutz, CEO

PRINTED NAME AND TITLE**DATE****DATE****DATE**



AIA[®] Document G709[™] – 2018

Proposal Request

PROJECT: *(name and address)*
SBSU Gunnison Branch

OWNER: *(name and address)*
State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

CONTRACT INFORMATION:
Contract For: General Construction
Date:

ARCHITECT: *(name and address)*
Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770

Architect's Project Number: 520.004
Proposal Request Number: 001
Proposal Request Date:

CONTRACTOR: *(name and address)*

The Owner requests an itemized proposal for changes to the Contract Sum and Contract Time for proposed modifications to the Contract Documents described herein. The Contractor shall submit this proposal within Zero (0) days or notify the Architect in writing of the anticipated date of submission.

(Insert a detailed description of the proposed modifications to the Contract Documents and, if applicable, attach or reference specific exhibits.)

THIS IS NOT A CHANGE ORDER, A CONSTRUCTION CHANGE DIRECTIVE, OR A DIRECTION TO PROCEED WITH THE WORK DESCRIBED IN THE PROPOSED MODIFICATIONS.

REQUESTED BY THE ARCHITECT:

PRINTED NAME AND TITLE



AIA® Document G704® – 2017

Certificate of Substantial Completion

PROJECT: *(name and address)*
SBSU Gunnison Branch

CONTRACT INFORMATION:
Contract For: General Construction
Date:

CERTIFICATE INFORMATION:
Certificate Number: 001
Date:

OWNER: *(name and address)*
State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

ARCHITECT: *(name and address)*
Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770

CONTRACTOR: *(name and address)*

The Work identified below has been reviewed and found, to the Architect's best knowledge, information, and belief, to be substantially complete. Substantial Completion is the stage in the progress of the Work when the Work or designated portion is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The date of Substantial Completion of the Project or portion designated below is the date established by this Certificate.
(Identify the Work, or portion thereof, that is substantially complete.)

Naylor Wentworth Lund
Architects

ARCHITECT *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE OF SUBSTANTIAL COMPLETION

WARRANTIES

The date of Substantial Completion of the Project or portion designated above is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:
(Identify warranties that do not commence on the date of Substantial Completion, if any, and indicate their date of commencement.)

WORK TO BE COMPLETED OR CORRECTED

A list of items to be completed or corrected is attached hereto, or transmitted as agreed upon by the parties, and identified as follows:
(Identify the list of Work to be completed or corrected.)

The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Unless otherwise agreed to in writing, the date of commencement of warranties for items on the attached list will be the date of issuance of the final Certificate of Payment or the date of final payment, whichever occurs first. The Contractor will complete or correct the Work on the list of items attached hereto within () days from the above date of Substantial Completion.

Cost estimate of Work to be completed or corrected: \$

The responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work, insurance, and other items identified below shall be as follows:
(Note: Owner's and Contractor's legal and insurance counsel should review insurance requirements and coverage.)

The Owner and Contractor hereby accept the responsibilities assigned to them in this Certificate of Substantial Completion:

CONTRACTOR *(Firm Name)*
State Bank of Southern
Utah

SIGNATURE

PRINTED NAME AND TITLE

DATE

OWNER *(Firm Name)*

SIGNATURE

PRINTED NAME AND TITLE

DATE

**SECTION 00 7200
GENERAL CONDITIONS**

FORM OF GENERAL CONDITIONS

1.01 THE GENERAL CONDITIONS APPLICABLE TO THIS CONTRACT IS ATTACHED FOLLOWING THIS PAGE.

END OF SECTION



AIA® Document A201® – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

SBSU Gunnison Branch

THE OWNER:

(Name, legal status and address)

State Bank of Southern Utah
377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

THE ARCHITECT:

(Name, legal status and address)

Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770

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ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act

or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

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The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

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

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and

approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

Additions and Deletions Report for

AIA® Document A201® – 2017

This Additions and Deletions Report, as defined on page 1 of the associated document, reproduces below all text the author has added to the standard form AIA document in order to complete it, as well as any text the author may have added to or deleted from the original AIA text. Added text is shown underlined. Deleted text is indicated with a horizontal line through the original AIA text.

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PAGE 1

SBSU Gunnison Branch

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(Name, legal status and address)

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377 North Main Street
P.O. Box 340
Cedar City, Utah 84721

...

Naylor Wentworth Lund Architects
163 West 1600 South, Suite 1
St. George, UT 84770

Certification of Document's Authenticity

AIA® Document D401™ – 2003

I, _____, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 16:01:43 ET on 06/19/2021 under Order No. 4341937151 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2017, General Conditions of the Contract for Construction, as published by the AIA in its software, other than those additions and deletions shown in the associated Additions and Deletions Report.

(Signed)

(Title)

(Dated)

DOCUMENT 00 85 00
WORK WITHIN STATE HIGHWAY RIGHT-OF-WAY

Utility work and other work within the Utah Department of Transportation (UDOT) highway right-of-way are subject to the requirements of UDOT.

UDOT's requirements for utility work within the UDOT highway right-of-way are included in the current edition of the State of Utah Rule 930-6 "Accommodation of Utilities and the Control and Protection of State Highway Rights of Way". Bound copies of this rule may be purchased from UDOT or an electronic copy may be downloaded at www.udot.utah.gov.

This project includes work within the UDOT highway right-of-way and will be subject to the requirements of UDOT. The Contactor will be required to obtain a permit from UDOT prior to starting construction.

END OF DOCUMENT

**SECTION 01 1100
SUMMARY OF WORK**

PART 1 GENERAL

1.01 PROJECT

- A. The Work consists of, in general, the construction of the new facility and site development, including utility extensions, modifications, and other site improvements required as a part of the Work.
 - 1. The work shall be completed on or before date indicated in Section 01 7700 - Project Closeout
 - 2. Site work includes excavation, grading, structural fill, base material at sidewalk and asphalt areas, topsoil, site concrete, paving, and utilities.
 - 3. The structures to be built as part of the project include cast-in-place concrete floors, concrete footing and foundation walls, concrete masonry units, wood framing members, pre-fabricated wood roof trusses, structural steel columns and steel framing members, plywood and metal roof deck with rigid insulation and flexible sheet roofing system. All required flashings, caulking and sealants, hollow metal door frames, aluminum storefront and entrances, glazing, finish hardware, etc.
 - 4. Finishes and furnishings include: gypsum drywall and accessories, metal stud framing, wood stud framing, building insulation, porcelain wall and floor tile, floor carpet, wood and rubber base, acoustical ceilings with support system, painting, identifying devices, etc.
 - 5. Systems include heating, ventilating, air conditioning, plumbing, site utilities, fire protection, lighting, power distribution, communication and alarm/signal systems.

1.02 OWNER OCCUPANCY

- A. Partial Owner Occupancy: The Owner reserves the right to occupy and to place and install equipment in completed areas of the building, prior to Substantial Completion provided that such occupancy does not interfere with completion of the Work and is agreeable with the Authority having Jurisdiction. Such placing of equipment and partial occupancy shall not constitute acceptance of the total work.
 - 1. A Certificate of Substantial Completion will be executed for each specific portion of the Work to be occupied prior to Owner occupancy.
 - 2. Prior to partial Owner occupancy, mechanical and electrical systems shall be fully operational. Required inspections and tests shall have been successfully completed. Upon occupancy the Owner will provide operation and maintenance of mechanical and electrical systems in occupied portions of the building.

1.03 OWNER FURNISHED ITEMS

- A. The Owner will provide furniture and equipment for the building.
 - 1. The Owner will arrange and pay for delivery of Owner furnished items in accordance with the Contractor's Construction Schedule, and will inspect deliveries for damage.
 - 2. If Owner furnished items are damaged, defective or missing, the Owner will arrange for replacement.
- B. Refer to Section 01 71 23, "Field Engineering," for site related service provided and paid for by the Owner.

1.04 CONTRACTOR USE OF SITE AND PREMISES

- A. General: During the construction period, the Contractor shall have full use of the premises within the Contract limits for construction operations. The Contractor's use of the premises is limited only by the Owner's right to perform construction operations with its own forces or to employ separate contractors on portions of the project.
 - 1. Confine operations to areas within Contract limits indicated. Portions of the site beyond areas, in which construction operations are indicated, are not to be disturbed. If such areas are disturbed, they shall be repaired without additional cost to the owner. School will be in session in adjacent areas for the full duration of the project. The contractor shall endeavor to protect students, staff, and visitors from danger while the construction proceeds by any and all means available to the contractor, ie fencing, barricades, notices,

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etc.

- B. 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.

1.05 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and other Division 1 – General Requirements specification sections, apply to this Section.

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. Cash allowances.

1.02 CASH ALLOWANCES

- A. Costs Included in Cash Allowances: Cost of product to Contractor or subcontractor, less applicable trade discounts, less cost of delivery to site , less applicable taxes .
- 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:
1. Assist Architect in selection of products, suppliers , and installers.
 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.

1.03 ALLOWANCES SCHEDULE

- A. Landscape Allowance: Include the stipulated sum of Thirty Thousand Dollars (\$30,000.00) for purchase, delivery and installation of underground irrigation system, topsoil, landscape plantings and other materials as may be required to provide complete system.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 2600
MODIFICATION PROCEDURES**

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.02 RELATED REQUIREMENTS:

- A. Section 01 2900 - Application for Payment for administrative procedures governing applications for payment.
- B. Section 01 3300 - Submittals for requirements for the Contractor's Construction Schedule.
- C. Section 00 4325 - Product Substitutions for administrative procedures for handling requests for substitutions made after award of the Contract.

1.03 MINOR CHANGES IN THE WORK:

- A. Supplemental instructions authorizing minor changes in the Work, not involving an adjustment to the Contract Sum or Contract Time, will be issued by the Architect on AIA form G710-1992, Architect's Supplemental Instructions.

1.04 CHANGE ORDER PROPOSAL REQUESTS

- A. Owner Initiated Proposal Requests
 - 1. Proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time will be issued by the Architect on AIA Document G709-2001 Work Changes Proposal Request, with a detailed description of the proposed change and supplemental or revised Drawings and Specifications, if necessary.
 - a. Proposal requests issued by the Architect are for information only. Do not consider them an instruction either to stop work in progress, or to execute the proposed change.
 - b. Unless otherwise indicated in the proposal request, within twenty (20) days of receipt of the proposal request, submit to the Architect for the Owner's review an estimate of cost necessary to execute the proposed change.
 - 1) Include a list of quantities of products to be purchased and unit costs, along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - 2) Indicate delivery charges, equipment rental, and amounts of trade discounts.
 - 3) Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- B. Contractor Initiated Change Order Proposal Requests
 - 1. When latent or other unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Architect.
 - a. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 - b. Include a list of quantities of products to be purchased and unit costs along with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 - c. Indicate delivery charges, equipment rental, and amounts of trade discounts.
 - d. Comply with requirements in Section 00 43 25, "Product Substitutions" if the proposed change in the Work requires the substitution of one product or system for a product or system specified.

1.05 CONSTRUCTION CHANGE DIRECTIVE

- A. Construction Change Directive

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1. When the Owner and Contractor are not in total agreement on the terms of a Change Order Proposal Request, the Architect may issue a Construction Change Directive on AIA Form G714-2007, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - a. The Construction Change Directive will contain a complete description of the change in the Work and designate the method to be followed to determine change in the Contract Sum or Contract Time.
- B. Upon the Owner's approval of a change order proposal request, the Architect will issue a change order for signatures of the Owner and Contractor on AIA Form G701-2001 as provided in the conditions of the Contract.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 2600

**SECTION 01 2900
APPLICATIONS FOR PAYMENT**

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements governing the Contractor's Applications for Payment.
 - 1. Coordinate the Schedule of Values and Applications for Payment with the Contractor's Construction Schedule, List of Subcontracts, and Submittal Schedule.
- C. The Contractor's Construction Schedule and Submittal Schedule are included in Section 01 3300 - Submittals.

1.02 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative schedules and forms, including:
 - a. Contractor's construction schedule.
 - b. Application for Payment form.
 - c. List of Subcontractors.
 - 1) Schedule of alternates.
 - d. List of principal suppliers and fabricators.
 - 2. Submit the Schedule of Values to the Architect at the earliest feasible date, but in no case later than seventy-two (72) hours after award of Contract or Notice to Proceed - whichever comes first.
- B. Format and Content: Use the Project Manual Table of Contents as a guide to establish the format for the Schedule of Values.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name of the Architect.
 - c. Contractor's name and address.
 - d. Date of submittal.
 - 2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
 - a. Related Specification Section.
 - b. Name of Subcontractor.
 - c. Name of manufacturer or fabricator.
 - d. Name of supplier.
 - e. Change Orders (numbers) that have affected value.
 - f. Dollar value.
 - g. Percentage of Contract Sum to the nearest one hundredth percent (.01%), adjusted to total one hundred percent (100%).
 - 3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Break principal subcontract amounts down into several line items.
 - 4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
 - 5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 - 6. Margins of Cost: Show line items for indirect costs, and margins on actual costs, only to the extent that such items will be listed individually in Applications for Payment. Each item

in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of general overhead and profit margin.

- a. At the Contractor's option, temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense.
7. Schedule Updating: In lieu of updating and resubmitting the Schedule of Values when Change Orders or Construction Change Directives result in a change in the Contract Sum, the Contractor can make each of these changes that increases or decrease the cost a separate line item.

1.03 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Architect and paid for by the Owner.
 1. The initial Application for Payment, the Application for Payment at date of Substantial Completion, and the final Application for Payment involve additional requirements.
- B. Payment Application Times: Each progress payment date is as indicated in the Agreement. The period of construction work covered by each Application or Payment is the period indicated in the Agreement.
 1. Each application for payment shall be accompanied by an updated job schedule along with updated as-built (record) drawings. (Note: Payment may be delayed if as-built (record) drawings are not current.)
- C. Payment Application Forms: Use AIA Document G702-1992 and Continuation Sheets G703-1992 as the form for Application for Payment.
 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions have been made.
 2. Include amounts of Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application, as separate line items.
- D. Transmittal: Submit three (3) executed originals of each Application for Payment to the Architect with attachments.
 1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Architect.
- E. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:
 1. List of Subcontractors.
 2. List of principal suppliers and fabricators.
 3. Schedule of Values.
 4. Contractor's Construction Schedule (preliminary if not final).
 5. List of Contractor's staff assignments.
 6. List of Contractor's principal consultants.
 7. Copies of authorizations and licenses from governing authorities for performance of the Work.
 8. Certificates of insurance and insurance policies.
- F. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
 1. Administrative actions and submittals that shall occur prior to this application include:
 - a. Occupancy permits and similar approvals.
 - b. Warranties (guarantees) and maintenance agreements.
 - c. Test/adjust/balance records.
 - d. Operating and Maintenance instructions.
 - e. Final cleaning.
 - f. As-Built (Record) Drawings.
 - g. Advice on shifting insurance coverages.

- h. List of incomplete work, recognized as exceptions to Architect's Certificate of Substantial Completion.
- G. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the final payment Application for Payment include the following:
 - 1. Completion of Project closeout requirements.
 - 2. Completion of items specified for completion after Substantial Completion.
 - 3. Assurance that unsettled claims will be settled.
 - 4. Proof those taxes, fees and similar obligations have been paid.
 - 5. Removal of temporary facilities and services.
 - 6. Removal of surplus materials, rubbish and similar elements.
 - 7. Change of door locks to Owner's access.
- H. Progress Payments
 - 1. Notice of extended payment provision. Application and certification for payment received by the fifth (5th) day of the month shall be reviewed and accepted or rejected by the tenth (10th) day of the month.
 - a. This Contract shall allow the Owner to make payment within thirty (30) days after acceptance of all billings.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 2900

**SECTION 01 3100
PROJECT COORDINATION**

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and supervisory requirements necessary for Project Coordination including, but not limited to:
 - 1. Coordination of the Work of all subcontractors, material suppliers and work performed under separate contracts.
 - 2. Administrative and supervisory personnel.
 - 3. General installation provisions.
 - 4. Cleaning and protection.
- C. Field engineering is included in Section 01 7123 - Field Engineering.
- D. Progress meetings, coordination meetings and pre-installation conferences are included in Section 01 3119 - Project Meetings.
- E. Requirements for the Contractor's Construction Schedule are included in Section 01 3300 - Submittals.

1.02 COORDINATION

- A. Coordination: Coordinate construction activities included under various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections of the Specifications that are dependent upon each other for proper installation, connection, and operation.
 - 1. Where the installation of one part of the Work is dependent on installation of other components, either before or after its own installation, schedule construction activities in the sequence required to obtain the best results.
 - 2. Where availability of space is limited, coordinate installation of different components to assure maximum accessibility for required maintenance, service and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Where necessary, prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.
 - 1. Prepare similar memoranda for the Owner and separate Contractors where coordination of their work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of schedules.
 - 2. Installation and removal of temporary facilities.
 - 3. Delivery and processing of submittals.
 - 4. Progress meetings.
 - 5. Project Closeout activities.

1.03 GENERAL INSTALLATION PROVISIONS

- A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected in an acceptable manner.
- B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

- C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.
- D. Provide attachment and connection devices and methods necessary for securing work. Secure work true to line and level. Allow for expansion and building movement.
- E. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.
- F. Recheck measurements and dimensions, before starting each installation.
- G. Install each component during weather conditions and Project status that will ensure the best possible results. Isolate each part of the completed construction from incompatible material as necessary to prevent deterioration.
- H. Coordinate temporary enclosures with required inspections and tests, to minimize the necessity of uncovering completed construction for that purpose.
- I. Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application indicated. Refer questionable mounting height decisions to the Architect for final decision.

1.04 CLEANING AND PROTECTION

- A. During handling and installation, clean and protect construction in progress and adjoining materials in place. Apply protective covering where required to ensure protection from damage or deterioration until Substantial Completion. Refer also to Section 01 5000 - Temporary Facilities.
- B. Clean and maintain completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects. Refer also to Section 01 74 13 - Cleaning Up.
- C. Limiting Exposures: Supervise construction activities to ensure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:
 - 1. Excessive static or dynamic loading.
 - 2. Excessive internal or external pressures.
 - 3. Excessively high or low temperatures.
 - 4. Thermal shock.
 - 5. Air contamination or pollution.
 - 6. Water or ice.
 - 7. Solvents.
 - 8. Chemicals.
 - 9. Light.
 - 10. Puncture.
 - 11. Abrasion.
 - 12. Heavy traffic.
 - 13. Soiling, staining and corrosion.
 - 14. Rodent and insect infestation.
 - 15. Combustion.
 - 16. Electrical current.
 - 17. High speed operation.
 - 18. Improper lubrication.
 - 19. Unusual wear or other misuse.
 - 20. Contact between incompatible materials.
 - 21. Destructive testing.
 - 22. Misalignment.
 - 23. Excessive weathering.
 - 24. Unprotected storage.
 - 25. Improper shipping or handling.

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26. Theft.

27. Vandalism.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 3100

**SECTION 01 3119
PROJECT MEETINGS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements for project meetings including, but not limited to:
 - 1. Pre-Construction Conference.
 - 2. Progress Meetings.

1.02 RELATED REQUIREMENTS

- A. Section 01 3200 - Schedules and Reports

1.03 PRE-CONSTRUCTION CONFERENCE

- A. Schedule a pre-construction conference and organizational meeting at the Project site or other convenient location no later than fifteen (15) days after execution of the Agreement and prior to commencement of construction activities. Conduct the meeting to review responsibilities and personnel assignments.
- B. Attendees: The Owner's representatives, Architect and the Consultants, the Contractor and his superintendent, major subcontractors, manufacturers, suppliers and other concerned parties shall each be represented at the conference by persons familiar with and authorized to conclude matters relating to the Work.
 - 1. Agenda: Discuss items of significance that could affect progress including such topics as:
 - a. Tentative construction schedule.
 - b. Critical work sequencing.
 - c. Designation of responsible personnel.
 - d. Procedures for processing field decisions and Change Orders.
 - e. Procedures for processing Applications for Payment.
 - f. Distribution of Contract Documents.
 - g. Submittal of Shop Drawings, Product Data and Samples.
 - h. Preparation of record documents.
 - i. Use of the premises.
 - j. Office, work and storage areas.
 - k. Equipment deliveries and priorities.
 - l. Safety procedures.
 - m. First aid.
 - n. Security.
 - o. Housekeeping.
 - p. Working hours.
 - 1) Specific instructions from the Owner.

1.04 PROGRESS MEETINGS

- A. Conduct progress meetings at the Project site at regularly scheduled intervals. Notify the Owner and Architect of scheduled meeting dates. Coordinate dates of meetings with monthly review of the payment request.
 - 1. Request for inspection by Contractor shall conform to requirements of the inspection agency.
 - a. All required information is to be logged in accordingly and kept at inspectors plan area (refer to Section 01 5000 - Temporary Facilities) form / log to be provided by Owner's On-staff Inspector.
- B. Attendees: In addition to representatives of the Owner and Architect, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with

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the Project and authorized to conclude matters relating to progress.

- C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the Project.
 - 1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 2. Review the present and future needs of each entity present, including such items as:
 - a. Interface requirements.
 - b. Time.
 - c. Sequences.
 - d. Deliveries.
 - e. Off-site fabrication problems.
 - f. Access.
 - g. Site utilization.
 - h. Temporary facilities and services.
 - i. Hours of work.
 - j. Hazards and risks.
 - k. Housekeeping.
 - l. Quality and work standards.
 - m. Change Orders.
 - n. Documentation of information for payment requests.
- D. Reporting: No later than three (3) days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - 1. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 01 3119

**SECTION 01 3200
SCHEDULES AND REPORTS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. Provide schedules and reports as specified complete.

1.02 STANDARDS

- A. Any material specified by reference to the numbers, symbol, or title of a specific standard, such as a commercial standard, a federal specification, a trade association standard, or other similar standards, shall comply with the requirements in the latest revision thereof and any amendment or supplement thereto in effect on the date of the executed Contract, except as limited to type, class or grade, or modified in such reference.
- B. Standards referred to, except as modified in the specifications, shall be in full force and effect as though printed in the specifications. The Architect will furnish, upon request, information as to how copies of the standards referred to may be obtained.
- C. Reference in the specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition.
- D. Approval By Architect: Where "as directed," "as required," "as permitted," "approved," "acceptance," or words of similar intent are used, it shall be understood that the direction, requirements, permission, approval, or acceptance of the Architect is intended unless stated otherwise.

1.03 REFERENCE TO BUILDING CODE

- A. Wherever the term "Building Code," is used in the Project Manual, said term shall be construed to mean the current edition of the building code governing the Work at the location of the Work. A copy of the "Code" shall be kept on hand in the job office by the Contractor.

1.04 TESTS AND INSPECTION

- A. Tests of materials will be made and concrete mixes designed by a testing engineer or laboratory.
- B. Samples: The Contractor shall furnish all samples of the materials required for such purposes to the testing engineer or laboratory in timely manner. The materials represented by samples under tests shall not be incorporated in the Work without the approval of the Architect. Copies of all test reports, with the action of the Architect noted thereon, shall be furnished the Contractor and Owner.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01 3200

**SECTION 01 3300
SUBMITTALS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements for submittals required for performance of the Work, including;
 - 1. Contractor's construction schedule.
 - 2. Shop Drawings.
 - 3. Product Data.
 - 4. Samples.
- C. Administrative Submittals: Refer to other Division 1 - General Requirements Sections and other Contract Documents for requirements for administrative SUBMITTALS. Such submittals include, but are not limited to:
 - 1. Applications for payment.
 - 2. Insurance certificates.
 - 3. List of Subcontractors.
- D. Inspection and test reports are included in Section 01 4500 - Quality Control Services.
- E. The General Contractor shall review all submittal information to include shop drawings, product data and samples to ensure that information submitted meets the specifications. Wherever submittals differ from the specifications, the General Contractor shall notify the Architect of such differences, alerting the Architect that submittal information is not in accordance with the Specifications.
- F. The General Contractor shall review all submittal information prior to forwarding to the Architect. All submittal data shall be stamped by the General Contractor indicating that he has reviewed the submittal documentation and it is in conformance with project construction documents, or submit information regarding deviations to requirements of the construction documents as per paragraph D. above. The Architect may refuse to review any submittal data which does not bear the General Contractor's stamp.
- G. Refer to individual Sections of the Specifications for additional instructions regarding Submittals.

1.02 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
 - a. The Architect reserves the right to withhold action on a submittal requiring coordination with other submittals, i.e.: color selections, until related submittals are received.
 - 3. Processing: Allow sufficient review time so that installation will not be delayed as a result of the time required to process submittals, including time for resubmittals. The Architect will endeavor to process all submittals according to the following schedule. However, if submittal data is time sensitive or will impact the construction schedule if not processed by a specific date, the General Contractor shall notify the Architect of such urgency and shall clearly label all time sensitive as URGENT providing the date the submittal must be processed by.

- a. Allow fifteen (15) working days for initial review. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. The Architect will promptly advise the Contractor when a submittal being processed must be delayed for coordination.
 - b. If an intermediate submittal is necessary, process the same as the initial submittal, allowing fifteen (15) working days for review.
 - c. Allow ten (10) working days for reprocessing each submittal.
 - d. No extension of Contract Time will be authorized because of failure to transmit submittals to the Architect sufficiently in advance of the Work to permit processing, or for failing to notify the Architect a submittal is time sensitive and must be processed by a specific date as per paragraph 3 above.
- B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.
1. Provide a space approximately 3" x 4" on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.
 2. Include the following information on the label for processing and recording action taken.
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Number and title of appropriate Specification Section.
 - i. Drawing number and detail references, as appropriate.
- C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from Contractor to Architect using a transmittal form. Submittals received from sources other than the Contractor will be returned without action.
1. On the transmittal Record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.
 2. Transmittal Form: Use AIA Document G810-2001 or form that contains the same information.

1.03 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Prepare a fully developed, horizontal bar-chart type Contractor's construction schedule. Submit within twenty (20) days of the date established for "Notice to Proceed."
1. Provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the Work as indicated in the "Schedule of Values".
 2. Within each time bar, indicate estimated completion percentage in ten percent (10%) increments. As work progresses, place a contrasting mark in each bar to indicate Actual Completion.
 3. Prepare the schedule on a sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for the entire construction period.
 4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on the schedule with other construction activities; include minor elements involved in the sequence of the Work. Show each activity in proper sequence. Indicate graphically, sequences necessary for completion of related portions of the Work.
 5. Coordinate the Contractor's construction schedule with the schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests and other schedules.

6. Indicate completion in advance of the date established for Substantial Completion. Indicate Substantial Completion on the schedule to allow time for the Architect's procedures necessary for certification of Substantial Completion.
- B. Work Stages: Indicate important stages of construction for each major portion of the Work, including testing and installation.
- C. Cost Correlation: At the head of the schedule, provide a two (2) item cost correlation line, indicating "pre-calculated" and "actual" costs. On the line, show dollar volume of work performed as of the dates used for preparation of payment requests.
- D. Distribution: Following response to the initial submittal, print and distribute copies to the Architect, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.
 1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.
- E. Schedule Updating: Revise the schedule each month and resubmit with each Application and Certificate for Payment.

1.04 SHOP DRAWINGS

- A. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not considered Shop Drawings.
 1. Contractors shall have the option of obtaining the Architects electronic drawings as an aid in preparing their submittal drawings. Refer to the included Copyright Release Agreement and be aware of all requirements therein. Drawings shall not be released until this form is properly completed and submitted along with the indicated administrative expense fee.
- B. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates and similar drawings. Include the following information:
 1. Dimensions.
 2. Identification of products and materials included.
 3. Compliance with specified standards.
 4. Notation of coordination requirements.
 5. Notation of dimensions established by field measurement.
 6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 " x 11" but no larger than 30" x 42".
 7. Submittal:
 - a. Submittals shall be submitted electronically and shall be in PDF format. General contractor shall email submittals to Architect's office.
 - b. Submittals shall be by Project Manual specification section. Each sections' products are to be submitted in separate PDF files. PDF files which include multiple specification sections will be returned without being reviewed.
 - c. Hard Copy Submittals are not permitted.
 8. Do not use shop drawings without an appropriate final stamp indicating action taken in connection with construction.
- C. Coordination drawings are a special type of shop drawing that show the relationship and integration of different construction elements that require careful coordination during fabrication or installation to fit in the space provided or function as intended.
 1. As requested by Architect submit coordination drawings for integration of different construction elements. Show sequences and relationships of separate components to avoid conflicts in use of space.
 2. Prepare coordination drawings to include information specified in Section 01 31 00, "Project Coordination," these may include components shown in detail on previously submitted shop drawings or product data.

1.05 PRODUCT DATA

- A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams and performance curves. Where Product Data must be specially prepared because standard printed data is not suitable for use, submit as "Shop Drawings."
1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products, some of which are not required, mark copies to indicate the applicable information. Include the following information:
 - a. Manufacturer's printed recommendations.
 - b. Compliance with recognized trade association standards.
 - c. Compliance with recognized testing agency standards.
 - d. Application of testing agency labels and seals.
 - e. Notation of dimensions verified by field measurement.
 - f. Notation of coordination requirements.
 2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.
 3. Submittal:
 - a. Submittals shall be submitted electronically and shall be in PDF format. General contractor shall email submittals to Architect's office.
 - b. Submittals shall be by Project Manual specification section. Each sections' products are to be submitted in separate PDF files. PDF files which include multiple specification sections will be returned without being reviewed.
 - c. Hard Copy Submittals are permitted except where product data is in the form of samples. Refer to paragraph 1.06 for submittal requirements for samples.
 4. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.
 - a. Do not proceed with installation until a copy of Product Data applicable is in the installer's possession.
 - b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.06 SAMPLES

- A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture and pattern.
1. Mount, display, or package Samples in the manner specified to facilitate review of qualities indicated. Prepare Samples to match the Architect's Sample. Include the following:
 - a. Generic description of the Sample.
 - b. Sample source.
 - c. Product name or name of manufacturer.
 - d. Compliance with recognized standards.
 - e. Availability and delivery time.
 2. Submit Samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
 - a. Where variation in color, pattern, texture or other characteristics are inherent in the material or product represented, submit multiple units (not less than three (3)), that show approximate limits of the variations.
 - b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, and details of assembly, connections, operation and similar construction characteristics.

- c. Refer to other Sections for Samples to be returned to the Contractor for incorporation into the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.
- 3. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit four (4) sets; two (2) will be returned marked with the action taken.
- 4. Maintain sets of Samples, as returned at the Project site, for quality comparisons throughout the course of construction.
 - a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.
 - b. Sample sets may be used to obtain final acceptance of the construction associated with each set.
- B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.
 - 1. Field Samples specified in individual Sections are special types of Samples. Field Samples are full-size examples erected on site to illustrate finishes, coatings, or finish materials and to establish the standard by which the Work will be judged.
 - a. Comply with submittal requirements to the fullest extent possible. Process transmittal forms to provide a record of activity.

1.07 ARCHITECT'S ACTION

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, the Architect will review each submittal, mark to indicate action taken, and return promptly.
 - 1. Compliance with specified characteristics is the Contractor's responsibility. Architect's review, whatever action taken, does not relieve the Contractor from meeting the specifications.
- B. Action Stamp: The Architect will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
 - 1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents; final acceptance will depend upon that compliance.
 - 2. When submittals are marked, "Note Comments," that part of the Work covered by the submittal may proceed provided it complies with notations on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.
 - 3. When submittal is marked, "Revise and Resubmit," do not proceed with that part of the Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark.
 - a. Do not permit submittals marked, "Revise and Resubmit" to be used at the Project site, or elsewhere, where work is in progress.
 - 4. When submittals are marked "Rejected," do not proceed with that part of the work. Prepare new submittals that are in compliance with the Specifications and/or as noted on the submittal - resubmit without delay.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01 3300

**SECTION 01 3301
COPYRIGHT RELEASE FORM**

IN RESPONSE TO THE CONTRACTOR'S (SUBCONTRACTOR'S) REQUEST TO UTILIZE PORTIONS OF THE COPYRIGHTED ELECTRONIC FILES PRODUCED BY NAYLOR WENTWORTH LUND ARCHITECTS FOR THE STATE BANK OF SOUTHERN UTAH - GUNNISON BRANCH PROJECT, LOCATED IN GUNNISON, UTAH, NAYLOR WENTWORTH LUND ARCHITECTS AGREES TO PROVIDE THE ELECTRONIC FILES AND ALLOW SUCH USAGE FOR THE CONTRACTOR'S (SUBCONTRACTOR'S) CONVENIENCE AND USE IN THE PREPARATION OF SHOP DRAWINGS, SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS:

- A. Our electronic files are compatible with: AutoCad 2021 (DWG format). Naylor Wentworth Lund Architects (hereafter us/we/our) makes no representation as to the compatibility of these files with the Contractor's (Subcontractor's) [hereafter you/your] hardware or software.
- B. The electronic files are for use only to aid you in producing your portion of this project. Data contained on these electronic files are part of our instruments of service and shall not be used by you or anyone else receiving these data through or from you for any purpose other than as a convenience in the preparation of shop drawings for this project. Any other use or reuse by you or by others will be at your sole risk and without liability or legal exposure to us. You agree to make no claim and hereby waive, to the fullest extent permitted by law, any claim or cause of action of any nature against our firm, our officers, directors, employees, agents or subconsultants that may arise out of or in connection with your use of the electronic files.
- C. Furthermore, you shall, to the fullest extent permitted by law, indemnify and hold us harmless against all damages, liabilities or costs, including reasonable attorneys' fees and defense costs, arising out of or resulting from your use of these electronic files.
- D. These electronic files are not construction documents. Differences may exist between these electronic files and corresponding hard-copy construction documents. We make no representation regarding the accuracy or completeness of the electronic files you receive. In the event that a conflict arises between the signed or sealed hard-copy construction documents prepared by us and the electronic files, the signed or sealed hard-copy construction documents shall govern. You are responsible for determining if any conflict exists. By your use of these electronic files, you are not relieved of your duty to fully comply with the contract documents, including, and without limitation, the need to check, confirm and coordinate all dimensions and details, take field measurements, verify field conditions and coordinate your work with that of other contractors for the project.
- E. Because information presented on the electronic files can be modified, unintentionally or otherwise, we reserve the right to remove all indicia of ownership and/or involvement from each electronic display. If present, any title blocks, and other references to Naylor Wentworth Lund Architects, our consultants, or our client, must be removed. Submitted drawings shown otherwise will be subject to rejection.

Under no circumstances shall delivery of the electronic files for use by you be deemed a sale by us, and we make no warranties, either express or implied, of merchantability and fitness for any particular purpose. In no event shall we be liable for any loss of profit or any consequential damages as a result of your use or reuse of these electronic files.

- F. You agree to pay us the sum of Two Hundred Fifty Dollars (\$250.00) to cover administrative expenses associated with this request.
- G. We will furnish you the following electronic files (please note which file(s) are being requested):
 - 1.
 - 2.
 - 3.
 - 4.
 - 5.
- H. You agree to all of the conditions listed above by signing this document.

_____ Contractor (Subcontractor)	<u>Naylor Wentworth Lund Architects</u> _____ Architect
_____ Signature	_____ Signature
_____ Printed Name and Title	_____ Printed Name and Title
_____ Date	_____ Date

END OF SECTION 01 3301

**SECTION 01 4219
REFERENCE STANDARDS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. Reference Standards Abbreviations and Titles
- C. Definitions

1.02 QUALITY ASSURANCE

- A. For products or 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. Should specified reference standards conflict with Contract Documents, request clarification from the Architect before proceeding.
- C. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Architect shall be altered by Contract Documents by mention or inference otherwise in any reference document.

1.03 DEFINITIONS

- A. General: Basic Contract definitions are included in the General Conditions.
- B. Indicated: The term, "indicated," refers to graphic representations, notes, or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar requirements in the Contract Documents. Where terms such as, "shown," "noted," "scheduled," and "specified," are used, it is to help the reader locate the reference; no limitation on location is intended.
- C. Directed: Terms, such as "directed," "requested," "authorized," "selected," "review," "required," and "permitted," mean "directed by the Architect," "requested by the Architect," and similar phrases.
- D. Regulation: The term, "Regulations," includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
- E. Furnish: The term, "furnish," is used to mean, "supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations."
- F. Install: The term, "install," is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations."
- G. Provide: The term, "provide," means "to furnish and install, complete and ready for the intended use."
- H. Installer: An "Installer" is the Contractor or an entity engaged by the Contractor, either as an employee, subcontractor, or sub-subcontractor, for performance of a particular construction activity, including installation, erection, application, and similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 - 1. The term, "experienced," when used with the term, "Installer," means having a minimum of five (5) previous Projects similar in size and scope to this Project, being familiar with the precautions required, and having complied with requirements of the authority having jurisdiction.
 - 2. Trades: Use of titles, such as "carpentry," is not intended to imply that certain construction activities must be performed by accredited individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to trades-persons of the corresponding generic name.

- I. Project Site is the space available to the Contractor for performance of construction activities, either exclusively or in conjunction with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land upon which the Project is to be built.
- J. Testing Laboratories: A "testing laboratory" is an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.04 SPECIFICATION FORMAT AND CONTENT EXPLANATION

- A. Specification Format: These Specifications are organized into Divisions and Sections based on the Construction Specifications Institute's MASTER-FORMAT 2011 numbering system.
- B. Specification Content: This Specification uses certain conventions in the use of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is the abbreviated type. Implied words and meanings will be appropriately interpreted. Singular words will be interpreted as plural and plural words interpreted as singular where applicable and the full context of the Contract Documents so indicates.
 - 2. Imperative and streamlined language is used generally in the Specifications. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the text, for clarity, subjective language is used to describe responsibilities that must be fulfilled indirectly by the Contractor, or by others when so noted.
 - a. The words, "shall be," shall be included by inference wherever a colon (:) is used within a sentence or phrase.

1.05 GOVERNING REGULATIONS/AUTHORITIES

- A. The Architect has contacted authorities having jurisdiction, where necessary, to obtain information necessary for preparation of Contract Documents; that information may or may not be of significance to the Contractor. Contact authorities having jurisdiction directly for information and decisions having a bearing on the Work.

PART 2 CONSTRUCTION INDUSTRY ORGANIZATION DOCUMENTS

2.01 INDUSTRY STANDARDS

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Where the date of issue of a referenced standard is not specified, comply with the standard in effect as of date of Contract Documents.
- C. Conflicting Requirements: Where compliance with two (2) or more standards is specified, and the standards establish different or conflicting requirements for minimum quantities or quality levels, refer requirements and uncertainties that are different, but apparently equal, to the Architect for a decision before proceeding.
 - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. In complying with these requirements, indicated numeric values are minimum or maximum, as appropriate for the context of the requirements. Refer uncertainties to the Architect for a decision before proceeding.
- D. Copies of Standards: Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entity's construction activity. Copies of applicable standards are not bound with the Contract Documents.
 - 1. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

- E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where such acronyms or abbreviations are used in the Specifications or other Contract Documents, they mean the recognized name of the trade association, standards generating organization, authority having jurisdiction, or other entity applicable to the context of the text provision. Refer to the "Encyclopedia of Associations," published by Gale Research Co., available in most libraries.

2.02 ABBREVIATIONS AND NAMES:

Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in Contract Documents are defined to mean the associated names. Names are subject to change and are believed, but are not assured, to be accurate and up to date as of date of Contract Documents.

AA -- ALUMINUM ASSOCIATION, INC.

AABC -- ASSOCIATED AIR BALANCE COUNCIL

AAMA -- AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION

AASHTO -- AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS

AATCC -- AMERICAN ASSOCIATION OF TEXTILE CHEMISTS & COLORISTS

ABMA -- AMERICAN BEARING MANUFACTURERS ASSOCIATION, INC.

ACA -- AMERICAN COATINGS ASSOCIATION

ACI -- AMERICAN CONCRETE INSTITUTE INTERNATIONAL

1. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).
2. ACI 301 - Specifications for Structural Concrete 2016.
3. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
4. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).

ADC -- AIR DIFFUSION COUNCIL

AFPA -- AMERICAN FOREST AND PAPER ASSOCIATION

AGA -- AMERICAN GALVANIZERS ASSOCIATION, INC.

AGC -- ASSOCIATED GENERAL CONTRACTORS OF AMERICA

AHA -- AMERICAN HARDBOARD ASSOCIATION

AHAM -- ASSOCIATION OF HOME APPLIANCE MANUFACTURERS:

AHRI -- AIR-CONDITIONING, HEATING, AND REFRIGERATION INSTITUTE

AI -- THE ASPHALT INSTITUTE

AIA -- THE AMERICAN INSTITUTE OF ARCHITECTS

AISC -- AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC.

AISC S303 - Code of Standard Practice for Steel Buildings and Bridges 2016.

AISI -- AMERICAN IRON AND STEEL INSTITUTE

AITC -- AMERICAN INSTITUTE OF TIMBER CONSTRUCTION

ALSC -- AMERICAN LUMBER STANDARDS COMMITTEE

AMCA -- AIR MOVEMENT AND CONTROL ASSOCIATION INTERNATIONAL, INC.

ANSI -- AMERICAN NATIONAL STANDARDS INSTITUTE

AOSA -- ASSOCIATION OF OFFICIAL SEED ANALYSTS

APA -- APA - THE ENGINEERED WOOD ASSOCIATION

APHA -- AMERICAN PUBLIC HEALTH ASSOCIATION

API -- AMERICAN PETROLEUM INSTITUTE

API -- ALLIANCE FOR THE POLYURETHANES INDUSTRY, AMERICAN PLASTICS COUNCIL

ARI -- AIR-CONDITIONING AND REFRIGERATION INSTITUTE (See AHRI)

ASA -- ACOUSTICAL SOCIETY OF AMERICA

ASCA -- ARCHITECTURAL SPRAY COATERS ASSOCIATION

ASCE -- AMERICAN SOCIETY OF CIVIL ENGINEERS

ASHRAE -- AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS, INC.

ASME -- THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

5. ASME A17.1 - Safety Code for Elevators and Escalators 2019.

ASPA -- AMERICAN SOD PRODUCERS ASSOCIATION (see Turfgrass Producers International)

ASSE -- AMERICAN SOCIETY OF SANITARY ENGINEERING

ASTM A Series -- ASTM INTERNATIONAL

6. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.

7. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.

ASTM B Series -- ASTM INTERNATIONAL

8. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2020.

ASTM C Series -- ASTM INTERNATIONAL

9. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile 2017.

10. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2019.

11. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar 2017.

12. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2019.

ASTM D Series -- ASTM INTERNATIONAL

ASTM E Series -- ASTM INTERNATIONAL

13. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.

14. ASTM E94 - Standard Guide for Radiographic Examination 2004 (Reapproved 2010).

ASTM F Series -- ASTM INTERNATIONAL

15. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners 2013.

ASTM G Series -- ASTM INTERNATIONAL

AWCI -- ASSOCIATION OF THE WALL AND CEILING INDUSTRIES INTERNATIONAL

AWI -- ARCHITECTURAL WOODWORK INSTITUTE

AWMAC -- ARCHITECTURAL WOODWORK MANUFACTURERS ASSOCIATION OF CANADA

AWPA -- AMERICAN WOOD-PRESERVERS' ASSOCIATION

AWS -- AMERICAN WELDING SOCIETY

AWWA -- AMERICAN WATER WORKS ASSOCIATION

BHMA -- BUILDERS HARDWARE MANUFACTURERS ASSOCIATION

BIA -- BRICK INDUSTRY ASSOCIATION

BIFMA -- BUSINESS AND INSTITUTIONAL FURNITURE MANUFACTURERS ASSOCIATION
 BOMA -- BUILDING OWNERS AND MANAGERS ASSOCIATION
 CBMA -- CERTIFIED BALLAST MANUFACTURERS ASSOCIATION
 CDA -- COPPER DEVELOPMENT ASSOCIATION, INC.
 CEA -- CONSUMER ELECTRONICS ASSOCIATION
 CFSEI - COLD-FORMED STEEL ENGINEERS INSTITUTE
 CGA -- COMPRESSED GAS ASSOCIATION
 CISCA -- CEILINGS & INTERIOR SYSTEMS CONSTRUCTION ASSOCIATION
 CISPI -- CAST IRON SOIL PIPE INSTITUTE
 CLFMI -- CHAIN LINK FENCE MANUFACTURERS INSTITUTE
 CONSENSUSDOCS -- CONSENSUSDOCS, LLC
 CPA -- COMPOSITE PANEL ASSOCIATION
 CPSC -- CONSUMER PRODUCTS SAFETY COMMISSION
 CRI -- CARPET AND RUG INSTITUTE
 CRRC -- COOL ROOF RATING COUNCIL
 CRSI -- CONCRETE REINFORCING STEEL INSTITUTE
 CSA -- CSA INTERNATIONAL (FORMERLY CANADIAN STANDARDS ASSOCIATION)
 CSI/CSC -- CONSTRUCTION SPECIFICATIONS INSTITUTE/CONSTRUCTION SPECIFICATIONS CANADA
 CTI -- CERAMIC TILE INSTITUTE
 DASMA -- DOOR & ACCESS SYSTEMS MANUFACTURERS' ASSOCIATION, INTERNATIONAL
 DBIA -- THE DESIGN BUILD INSTITUTE OF AMERICA, INC.
 DFI -- DEEP FOUNDATION INSTITUTE
 DHI -- DOOR AND HARDWARE INSTITUTE
 DIN -- DEUTSCHES INSTITUT FUR NORMUNG
 EIA -- ELECTRONIC INDUSTRIES ALLIANCE
 EIMA -- EXTERIOR INSULATION MANUFACTURERS ASSOCIATION
 EJCDC -- ENGINEERS' JOINT CONTRACT DOCUMENTS COMMITTEE
 EJMA -- EXPANSION JOINT MANUFACTURERS ASSOCIATION
 ETL -- ETL TESTING LABORATORY
 FEMA -- FEDERAL EMERGENCY MANAGEMENT AGENCY
 FM -- FACTORY MUTUAL GLOBAL
 GA -- GYPSUM ASSOCIATION
 GANA -- GLASS ASSOCIATION OF NORTH AMERICA
 GEI -- GREENGUARD ENVIRONMENTAL INSTITUTE
 GREENSEAL -- GREENSEAL, INC.
 GRI -- GEOSYNTHETIC RESEARCH INSTITUTE
 HI -- THE HYDRONICS INSTITUTE (See AHRI)
 HPDC -- HEALTH PRODUCT DECLARATION COLLABORATIVE
 HPVA -- HARDWOOD PLYWOOD VENEER ASSOCIATION
 HPW -- H.P. WHITE LABORATORY, INC.

IAAF -- INTERNATIONAL AMATEUR ATHLETIC FEDERATION
 IAPMO -- INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS
 IAS -- INTERNATIONAL ACCREDITATION SERVICE
 ICBO -- INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS
 ICBO-ES -- ICBO EVALUATION SERVICE, INC.
 ICC -- INTERNATIONAL CODE COUNCIL, INC.
 ICC-ES -- ICC EVALUATION SERVICE, INC.
 ICEA -- INSULATED CABLE ENGINEERS ASSOCIATION
 IEC -- INTERNATIONAL ELECTROTECHNICAL COMMISSION
 IEEE -- INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS
 IES/IESNA -- ILLUMINATING ENGINEERING SOCIETY
 IGMA -- INSULATING GLASS MANUFACTURERS ALLIANCE
 IGSHPA -- INTERNATIONAL GROUND SOURCE HEAT PUMP ASSOCIATION
 ILI -- INDIANA LIMESTONE INSTITUTE OF AMERICA, INC.
 ISA -- INSTRUMENT SOCIETY OF AMERICA
 ISDI -- INSULATED STEEL DOOR INSTITUTE
 ISFA - INTERNATIONAL SURFACE FABRICATORS ASSOCIATION
 ISS -- IRON AND STEEL SOCIETY
 ISSFA - INTERNATIONAL SOLID SURFACE FABRICATORS ASSOCIATION
 ISO -- INTERNATIONAL STANDARDS ORGANIZATION
 ITS -- INTERTEK TESTING SERVICES NA, INC.
 KCMA -- KITCHEN CABINET MANUFACTURERS ASSOCIATION
 LIA -- LEAD INDUSTRIES ASSOCIATION, INC.
 LPI -- LIGHTNING PROTECTION INSTITUTE
 MBMA -- METAL BUILDING MANUFACTURERS ASSOCIATION
 M-H -- MCGRAW-HILL BOOK COMPANY
 MFMA -- MAPLE FLOORING MANUFACTURERS ASSOCIATION
 MFMA -- METAL FRAMING MANUFACTURERS ASSOCIATION
 MIA -- MARBLE INSTITUTE OF AMERICA, INC.
 ML/SFA -- METAL LATH/STEEL FRAMING ASSOCIATION - See NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
 MPI -- MASTER PAINTERS INSTITUTE (MASTER PAINTERS AND DECORATORS ASSOCIATION)
 MMSA -- MATERIALS AND METHODS STANDARDS ASSOCIATION
 MSS -- MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND FITTINGS INDUSTRY, INC.
 NAA -- NATIONAL ARBORIST ASSOCIATION
 NAAMM -- THE NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS
 NACE -- NACE INTERNATIONAL
 NADCA -- NATIONAL AIR DUCT CLEANING ASSOCIATION
 NAMM -- NATIONAL ASSOCIATION OF MIRROR MANUFACTURERS

NAPHCC -- NATIONAL ASSOCIATION OF PLUMBING HEATING COOLING CONTRACTORS
 NBBI -- THE NATIONAL BOARD OF BOILER AND PRESSURE VESSEL INSPECTORS
 NBGQA -- NATIONAL BUILDING GRANITE QUARRIES ASSOCIATION, INC.
 NCAA -- NATIONAL COLLEGIATE ATHLETIC ASSOCIATION:
 NCMA -- NATIONAL CONCRETE MASONRY ASSOCIATION
 NCWPB - NATIONAL CERTIFIED PIPE WELDING BUREAU
 NCRP -- NATIONAL COUNCIL ON RADIATION PROTECTION AND MEASUREMENTS
 NEBB -- NATIONAL ENVIRONMENTAL BALANCING BUREAU
 NECA -- NATIONAL ELECTRICAL CONTRACTORS ASSOCIATION
 NEII -- NATIONAL ELEVATOR INDUSTRY, INC.
 NELMA -- NORTHEASTERN LUMBER MANUFACTURERS ASSOCIATION, INC.
 NEMA -- NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
 NETA -- INTERNATIONAL ELECTRICAL TESTING ASSOCIATION
 NFHS -- NATIONAL FEDERATION OF STATE HIGH SCHOOL ASSOCIATIONS:
 NFPA -- NATIONAL FIRE PROTECTION ASSOCIATION
 NFRC -- NATIONAL FENESTRATION RATING COUNCIL, INC.
 NFSMI -- NATIONAL FOOD SERVICE MANAGEMENT INSTITUTE
 NHLA -- NATIONAL HARDWOOD LUMBER ASSOCIATION
 NLA -- NATIONAL LIME ASSOCIATION
 NPA -- NATIONAL PARTICLEBOARD ASSOCIATION
 NPCA -- NATIONAL PAINT AND COATINGS ASSOCIATION
 NRCA -- NATIONAL ROOFING CONTRACTORS ASSOCIATION
 NSF -- NSF INTERNATIONAL (THE PUBLIC HEALTH AND SAFETY ORGANIZATION)
 NSWMA -- NATIONAL SOLID WASTES MANAGEMENT ASSOCIATION
 NTMA -- NATIONAL TERRAZZO AND MOSAIC ASSOCIATION, INC., THE
 NTMA -- NATIONAL TILE AND MARBLE ASSOCIATION
 NWFA -- NATIONAL WOOD FLOORING ASSOCIATION
 NWWDA -- NATIONAL WOOD WINDOW AND DOOR ASSOCIATION (name changed to WDMA)
 OWMA -- OPERABLE WALL MANUFACTURERS ASSOCIATION
 PCA -- PORTLAND CEMENT ASSOCIATION
 PCI -- PRECAST/PRESTRESSED CONCRETE INSTITUTE
 PDCA -- PAINTING AND DECORATING CONTRACTORS OF AMERICA
 PDI -- PLUMBING AND DRAINAGE INSTITUTE
 PECI - PORTLAND ENERGY CONSERVATION, INC.
 PEI -- PORCELAIN ENAMEL INSTITUTE
 PPI -- PLASTICS PIPE INSTITUTE
 PTI -- POST-TENSIONING INSTITUTE
 RCSC -- RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS
 RIS -- REDWOOD INSPECTION SERVICE
 RFCI -- RESILIENT FLOOR COVERING INSTITUTE

RTI - ROOF TILE INSTITUTE
 SAE -- SAE INTERNATIONAL
 SBCCI -- SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL, INC.
 SCS - SCIENTIFIC CERTIFICATION SYSTEMS
 SCTE -- SOCIETY OF CABLE TELECOMMUNICATIONS ENGINEERS
 SDI -- STEEL DECK INSTITUTE
 SDI -- STEEL DOOR INSTITUTE
 SEFA -- SCIENTIFIC EQUIPMENT AND FURNITURE ASSOCIATION
 SIGMA -- SEALED INSULATING GLASS MANUFACTURERS ASSOCIATION (SEE IGMA)
 SJI -- STEEL JOIST INSTITUTE
 SMA -- SCREEN MANUFACTURERS ASSOCIATION
 SMA -- STUCCO MANUFACTURERS ASSOCIATION, INC.
 SMACNA -- SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.
 SPIB -- SOUTHERN PINE INSPECTION BUREAU, INC.
 SPRI -- SINGLE PLY ROOFING INDUSTRY
 SSPC -- SOCIETY FOR PROTECTIVE COATINGS
 SWI -- STEEL WINDOW INSTITUTE
 SWRI -- SEALANT, WATERPROOFING AND RESTORATION INSTITUTE
 TCNA -- TILE COUNCIL OF NORTH AMERICA, INC.
 TIA -- TELECOMMUNICATIONS INDUSTRY ASSOCIATION
 TPI -- TRUSS PLATE INSTITUTE
 16. TPI BCSI 1 - Building Component Safety Information Booklet: The Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses 2018.
 17. TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction 2014.
 18. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses 1989.
 TPI -- TURFGRASS PRODUCERS INTERNATIONAL
 UL -- UNDERWRITERS LABORATORIES INC.
 ULC -- UNDERWRITERS' LABORATORIES OF CANADA
 USGBC -- U. S. GREEN BUILDING COUNCIL
 VSI -- VINYL SIDING INSTITUTE, A DIVISION OF THE SOCIETY OF THE PLASTICS INDUSTRY, INC.
 WASTEC -- WASTE EQUIPMENT TECHNOLOGY ASSOCIATION
 WCLIB -- WEST COAST LUMBER INSPECTION BUREAU
 WCMA -- WINDOW COVERING MANUFACTURERS ASSOCIATION
 WDMA -- WINDOW AND DOOR MANUFACTURERS ASSOCIATION (formerly NWWDA)
 WI -- WOODWORK INSTITUTE
 WMMPA -- WOOD MOULDING AND MILLWORK PRODUCERS ASSOCIATION
 WWPA -- WESTERN WOOD PRODUCTS ASSOCIATION

PART 3 UNITED STATES GOVERNMENT AND RELATED AGENCIES DOCUMENTS

3.01 ABBREVIATIONS AND NAMES:

Names and titles of federal government standard or Specification producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standard or Specification producing agencies of the federal government.

Names and addresses are subject to change; they are believed, but are not assured, to be accurate and up to date as of the date of the Contract Documents.

CFR -- CODE OF FEDERAL REGULATIONS

ATBCB -- US ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD (THE ACCESS BOARD)

COE -- CORPS OF ENGINEERS, U.S. ARMY

CPSC -- CONSUMER PRODUCTS SAFETY COMMISSION

DOS -- UNITED STATES DEPARTMENT OF STATE

EPA -- ENVIRONMENTAL PROTECTION AGENCY

FAA -- FEDERAL AVIATION ADMINISTRATION

FDA -- FOOD AND DRUG ADMINISTRATION

FEMA -- U.S. FEDERAL EMERGENCY MANAGEMENT AGENCY

FHWA -- FEDERAL HIGHWAY ADMINISTRATION

FS -- FEDERAL SPECIFICATIONS AND STANDARDS (General Services Administration)

GSA -- U.S. GENERAL SERVICES ADMINISTRATION

MIL -- MILITARY SPECIFICATIONS AND STANDARDS

NIJ -- NATIONAL INSTITUTE OF JUSTICE (DEPT. OF JUSTICE)

NSA -- NATIONAL SECURITY AGENCY

PS -- PRODUCT STANDARDS

1. PS 1 - Structural Plywood 2009 (Revised 2019).

USDA -- UNITED STATES DEPARTMENT OF AGRICULTURE

USGS -- UNITED STATES GEOLOGICAL SURVEY

END OF SECTION

**SECTION 01 4500
QUALITY CONTROL SERVICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements for quality control services.
- C. Quality control services include inspections and tests and related actions including reports performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.
- D. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- E. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- F. Quality assurance.

1.02 RESPONSIBILITIES

- A. The Owner will engage the services of an independent agency to perform inspections and tests specified as the Owner's responsibilities. Payment for these services will be made by the Owner directly to the Inspection and Testing Professional engaged by the Owner.
 - 1. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
- B. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - 1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
 - 2. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to:
 - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - d. Providing the agency with a preliminary design mix proposed for use for material mixes that require control by the testing agency.

- e. Security and protection of samples and test equipment at the Project site.
- C. Owner Responsibilities: The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by another identified entity. Costs for these services are not included in the Contract Sum.
 - 1. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the Owner's responsibility.
 - 2. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar work.

1.03 SUBMITTALS

- A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect, in duplicate.
 - 1. Submit additional copies of each written report directly to the Architect's Structural Engineer.
 - 2. Report Data: Written reports of each inspection test or similar service shall include, but not be limited to:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and testing method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample-taking and testing.
 - k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on retesting.

1.04 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are pre-qualified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
 - 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

1.05 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements found in Section 01 7329 - Cutting and Patching.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 4500
QUALITY CONTROL SERVICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements for quality control services.
- C. Quality control services include inspections and tests and related actions including reports performed by independent agencies, governing authorities, and the Contractor. They do not include Contract enforcement activities performed by the Architect.
- D. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.
- E. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.
 - 1. Specific quality control requirements for individual construction activities are specified in the Sections that specify those activities. Those requirements, including inspections and tests, cover production of standard products as well as customized fabrication and installation procedures.
 - 2. Inspections, test and related actions specified are not intended to limit the Contractor's quality control procedures that facilitate compliance with Contract Document requirements.
 - 3. Requirements for the Contractor to provide quality control services required by the Architect, Owner, or authorities having jurisdiction are not limited by provisions of this Section.
- F. Quality assurance.

1.02 RESPONSIBILITIES

- A. The Owner will engage the services of an independent agency to perform inspections and tests specified as the Owner's responsibilities. Payment for these services will be made by the Owner directly to the Inspection and Testing Professional engaged by the Owner.
 - 1. Where the Owner has engaged a testing agency or other entity for testing and inspection of a part of the Work, and the Contractor is also required to engage an entity for the same or related element, the Contractor shall not employ the entity engaged by the Owner, unless otherwise agreed in writing with the Owner.
- B. Retesting: The Contractor is responsible for retesting where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility.
 - 1. Cost of retesting construction revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original construction.
 - 2. Associated Services: The Contractor shall cooperate with agencies performing required inspections, tests and similar services and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to:
 - a. Providing access to the Work and furnishing incidental labor and facilities necessary to facilitate inspections and tests.
 - b. Taking adequate quantities of representative samples of materials that require testing or assisting the agency in taking samples.
 - c. Providing facilities for storage and curing of test samples, and delivery of samples to testing laboratories.
 - d. Providing the agency with a preliminary design mix proposed for use for material mixes that require control by the testing agency.

- e. Security and protection of samples and test equipment at the Project site.
- C. Owner Responsibilities: The Owner will provide inspections, tests and similar quality control services specified to be performed by independent agencies and not by the Contractor, except where they are specifically indicated as the Contractor's responsibility or are provided by another identified entity. Costs for these services are not included in the Contract Sum.
 - 1. The Owner will employ and pay for the services of an independent agency, testing laboratory or other qualified firm to perform services which are the Owner's responsibility.
 - 2. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar work.

1.03 SUBMITTALS

- A. The independent testing agency shall submit a certified written report of each inspection, test or similar service, to the Architect, in duplicate.
 - 1. Submit additional copies of each written report directly to the Architect's Structural Engineer.
 - 2. Report Data: Written reports of each inspection test or similar service shall include, but not be limited to:
 - a. Date of issue.
 - b. Project title and number.
 - c. Name, address and telephone number of testing agency.
 - d. Dates and locations of samples and tests or inspections.
 - e. Names of individuals making the inspection or test.
 - f. Designation of the Work and testing method.
 - g. Identification of product and Specification Section.
 - h. Complete inspection or test data.
 - i. Test results and an interpretation of test results.
 - j. Ambient conditions at the time of sample-taking and testing.
 - k. Comments or professional opinion as to whether inspected or tested Work complies with Contract Document requirements.
 - l. Name and signature of laboratory inspector.
 - m. Recommendations on retesting.

1.04 QUALITY ASSURANCE

- A. Qualification for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, which are pre-qualified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which specialize in the types of inspections and tests to be performed.
 - 1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the State in which the Project is located.

1.05 REPAIR AND PROTECTION

- A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes to eliminate deficiencies, including deficiencies in visual qualities of exposed finishes. Comply with Contract Document requirements found in Section 01 7329 - Cutting and Patching.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

**SECTION 01 5000
TEMPORARY FACILITIES**

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies requirements for temporary services and facilities, including utilities, construction and support facilities, security and protection. Temporary utilities shall be paid for by the Contractor.
- C. Temporary utilities required include, but are not limited to:
 - 1. Water service and distribution.
 - 2. Temporary electric power and light.
 - 3. Telecommunication Services: Provide telephone service and data service for on-site windows based personal computer dedicated to project telecommunications, with necessary software and laser printer.
 - 4. All resulting costs for power, light and water required during construction shall be paid for by the Contractor.
 - 5. All resulting costs for telecommunication services required during construction shall be paid for by the Contractor.
- D. Temporary construction and support facilities required include, but are not limited to the following:
 - 1. Temporary heat.
 - 2. Field offices and storage sheds.
 - 3. Sanitary facilities, including drinking water.
 - 4. Temporary enclosures.
 - 5. Temporary Project identification sign board.
 - 6. Waste disposal services.
 - 7. Rodent and pest control.
- E. Security and protection facilities required include, but are not limited to:
 - 1. Temporary fire protection.
 - 2. Barricades, warning signs, lights.
 - 3. Enclosure fence for the construction site with locking gates.
 - 4. Environmental protection and dust palliation during construction.
- F. Additional barricades, entrances, environmental barriers, etc. as may be required by government regulations and/or as shown and detailed on the civil drawings and specifications.

1.02 SUBMITTALS

- A. Implementation and Termination Schedule: Submit a schedule indicating implementation and termination of each temporary utility within fifteen (15) days of the date established for commencement of the Work.

1.03 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction, including, but not limited to:
 - 1. Building Code requirements.
 - 2. Health and safety regulations.
 - 3. Utility company regulations.
 - 4. Police, Fire Department and Rescue Squad rules.
 - 5. Environmental protection regulations.
- B. Standards: Comply with IBC Chapter 33, "Safeguards during construction", ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and NECA Electrical Design Library, "Temporary Electrical Facilities."

1. Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services," prepared jointly by AGC and ASC, for industry recommendations.
 2. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70 latest edition).
- C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.04 PROJECT CONDITIONS

- A. Temporary Utilities: Prepare a schedule indicating dates for implementation and termination of each temporary utility. At the earliest feasible time, when acceptable to the Owner, change over from use of temporary service to use of the permanent service.
- B. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Take necessary fire prevention measures. Do not overload facilities, or permit them to interfere with progress. Do not allow hazardous dangerous or unsanitary conditions, or public nuisances to develop or persist on the site.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. General: Provide new materials; if acceptable to the Architect, undamaged, previously used materials in serviceable condition may be used. Provide materials suitable for the use intended.
- B. Lumber and Plywood: Comply with requirements in Division 6 - Wood and Plastics, Section 06 10 00, "Carpentry."
1. For job built temporary offices, shops and sheds within the construction area, provide UL labeled, fire-treated lumber and plywood for framing, sheathing and siding.
 2. For sign board, provide exterior type, Grade B-B High Density Concrete Form Overlay Plywood conforming to PS-1, of sizes and thickness indicated.
 3. For fences, provide exterior type, minimum 3/8" thick plywood or chain link fencing a minimum of 6'-0" high.
- C. Roofing Materials: Provide UL Class "A" standard weight asphalt shingles complying with ASTM D 3018, or UL Class "C" mineral surfaced roll roofing complying with ASTM D 249 on roofs of job built temporary offices, shops and sheds.
- D. Paint: Comply with requirements of Division 9 - Finishes, Section 09 90 00, "Painting."
1. For sign panels and applying graphics, provide exterior grade alkyd gloss enamel over exterior primer.
- E. Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with flame-spread rating of fifteen (15) or less. For temporary enclosures provide translucent nylon reinforced laminated polyethylene or polyvinyl chloride fire retardant tarpaulins.
- F. Water: Provide potable water approved by local health authorities.
- G. Open-Mesh Fencing: Provide eleven (11) ga., galvanized 2", chain link fabric fencing 6' high with galvanized barbed wire top strand and galvanized steel pipe posts, 1-1/2" I.D. for line posts and 2-1/2" I.D. for corner posts or acceptable alternative materials as approved by the Owner.

2.02 EQUIPMENT

- A. General: Provide new equipment; if acceptable to the Architect, undamaged, previously used equipment in serviceable condition may be used. Provide equipment suitable for use intended.
- B. Water Hoses: Provide 3/4" heavy-duty, abrasion resistant, flexible rubber hoses with pressure rating greater than the maximum pressure of the water distribution system; provide adjustable shut-off nozzles at hose discharge.
- C. Electrical Outlets: Provide properly configured NEMA polarized outlets to prevent insertion of 110-120 volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for connection of power tools and

equipment.

- D. Electrical Power Cords: Provide grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress.
- E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.
- F. Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the type of fuel being consumed.
- G. Temporary Offices: Provide prefabricated or mobile units or similar job built construction with lockable entrances, operable windows and serviceable finishes. Provide heated and air-conditioned units on foundations adequate for normal loading.
- H. Temporary Toilet Units: Provide self-contained single occupant toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar nonabsorbent material.
- I. First Aid Supplies: Comply with governing regulations.
- J. Fire Extinguishers: Provide hand carried, portable UL-rated, class "A" fire extinguishers for temporary offices and similar spaces. In other locations provide hand carried, portable, UL-rated, class "ABC" dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposures.
 - 1. Comply with IFC Chapter 906 for classification, extinguishing agent and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.
- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed, or are replaced by authorized use of completed permanent facilities.

3.02 TEMPORARY UTILITY INSTALLATION

- A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where the company provides only part of the service, provide the remainder with matching, compatible materials and equipment; comply with the company's recommendations.
 - 1. Arrange with the company and existing users for a time when service can be interrupted, where necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked in services.
 - 3. Obtain easements to bring temporary utilities to the site, where the Owner's easements cannot be used for that purpose.
- B. Water Service: Install water service and distribution piping of sizes and pressures adequate for construction until permanent water service is in use.
- C. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include transformers, overload protected disconnects, automatic ground-fault interrupters and main distribution switch gear.
- D. Temporary Lighting: Whenever overhead floor or roof deck has been installed, provide temporary lighting with local switching adequate for each item of construction.
- E. Temporary Telephone and FAX Machine: Provide temporary telephone service for all personnel engaged in construction activities, throughout the construction period.

1. At each telephone, post a list of important telephone numbers.
 2. Temporary telephone and FAX machine shall be maintained from start of construction until final acceptance.
- F. Provide earthen embankments and similar barriers in and around excavations and subgrade construction, sufficient to prevent flooding by runoff of storm water from heavy rains.

3.03 TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION

- A. Locate field offices, storage sheds, sanitary facilities and other temporary construction and support facilities for easy access.
1. Maintain temporary construction and support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.
- B. Provide incombustible construction for offices, shops and sheds located within thirty (30) feet of building lines.
- C. Temporary Heat: Provide temporary heat required by construction activities, for curing or drying of completed installations or protection of installed construction from adverse effects of low temperatures. Select safe equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce the ambient condition required and minimize consumption of energy.
- D. Heating Facilities: Except where use of the permanent system is authorized, provide vented self-contained LP gas or fuel oil heaters with individual space thermostatic control.
1. Use of gasoline-burning space heaters, open flame type heating units is prohibited.
- E. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip offices as follows:
1. Furnish with a desk and chairs, a 4-drawer file cabinet, plan table and plan rack.
 2. In addition, the Contractor shall furnish appropriate space, plan table and dedicated set of Contract Documents for use by the Owner's special inspector.
- F. Sanitary facilities include temporary toilets, drinking water facilities. Comply with regulations and health codes for the type, number, location, operation and maintenance of facilities. Install where facilities will best serve the Project's needs.
1. Provide toilet tissue, paper towels, paper cups and similar disposable materials for each facility. Provide covered waste containers for used material.
- G. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.
- H. Drinking Water Facilities: Provide containerized tap dispenser bottled-water type drinking water units, including paper supply.
- I. Temporary Enclosures: Provide temporary enclosure for protection of construction in progress and completed, from exposure, foul weather, other construction operations and similar activities.
1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
 2. Install tarpaulins securely, with incombustible wood framing and other materials. Close openings of twenty-five (25) square feet or less with plywood or similar materials.
 3. Close openings through floor or roof decks and horizontal surfaces with load-bearing wood-framed construction.
 4. Where temporary wood or plywood enclosure exceeds one hundred (100) square feet in area, use UL-labeled fire-retardant treated material for framing and main sheathing.
- J. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of IFC Chapter 14 for removal of combustible waste material and

debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80 deg. F. (27 deg C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material in a lawful manner.

- K. Rodent and Pest Control: Follow practices to minimize attraction and harboring of rodents, roaches and other pests. Employ a professional service to perform extermination and control procedures at regular intervals so the Project will be relatively free of pests and their residues at Substantial Completion. Perform control operations in a lawful manner using environmentally safe materials.
- L. Project Identification and Temporary Signs: See Supplemental drawing included in this specification as Attachment A, for details of the required project sign. Location for the sign will be established by the Architect.

3.04 PROJECT IDENTIFICATION AND TEMPORARY SIGNS

- A. See Supplemental drawing included in Section 01 50 00.01 Temporary Facilities-Attachment A, for details of the required project sign. Location for the sign will be established by the Architect.

3.05 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer as requested by the Architect.
- B. Temporary Fire Protection: Until fire protection needs are supplied by permanent facilities, install and maintain temporary fire protection facilities of the types needed to protect against reasonably predictable and controllable fire losses. Comply with IFC 906, "Code for Portable Fire Extinguishers," and IBC Chapter 33 and IFC Chapter 14 "Fire Safety During Construction."
 - 1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one extinguisher on each floor.
 - 2. Store combustible materials in containers in fire-safe locations.
 - 3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities. Prohibit smoking in hazardous fire exposure areas.
 - 4. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of fire ignition.
- C. Barricades, Warning Signs and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- D. Enclosure Fence: When excavation begins, install an enclosure fence with lockable entrance gates to enclose the entire site or the portion determined sufficient to accommodate construction operations. Install in a manner that will prevent people, dogs and other animals from easily entering the site, except by the entrance gates.
 - 1. Provide open-mesh, chain-link fencing with posts set in a compacted mixture of gravel and earth.
- E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft and similar violations of security.
 - 1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.
- F. Environmental Protection: Provide protection, operate temporary facilities and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result. Avoid use of tools and equipment which produce harmful noise. Restrict use of noise making tools and equipment to hours that will minimize complaints from persons or firms near the site.

1. During dry and blowing conditions, use wet techniques to minimize blowing dust resultant from earthwork and construction operations.
- G. Building Enclosure: During construction sequences the Contractor shall construct any and all temporary barrier walls to keep all areas of the building secure.
- H. Temporary Building Protection: During construction sequences, the Contractor shall protect all new construction from damage to include but not limited to the following:
 1. Propping doors open using items that will damage the finish.
 - a. Rock, pieces of concrete, concrete block masonry, etc. will not be allowed.
 2. Staining concrete floors that will be sealed and exposed only.
 - a. All sealed exposed concrete floors shall be covered completely with Visquene and plywood, (or other accepted methods) wall to wall to protect finish during construction.
 3. Marring, gouging or marking on walls.
 4. The Architect shall have the authority to require replacement of materials and/or products that are damaged as noted.

3.06 OPERATION, TERMINATION AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.
- B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.
 1. Maintain operation of temporary enclosures, heating, cooling, ventilation and similar facilities on a twenty-four (24) hour day basis where required to achieve indicated results and to avoid possibility of damage.
 2. Protection: Prevent water filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- C. Termination and Removal: Unless the Architect requests that it be maintained longer, remove each temporary facility when the need has ended, or when replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with the temporary facility. Repair damaged work, clean exposed surfaces and replace construction that cannot be satisfactorily repaired.
 1. Materials and facilities that constitute temporary facilities are property of the Contractor. The Owner reserves the right to take possession of Project identification sign.
 2. At Substantial Completion, clean and renovate permanent facilities that have been used during the construction period, including but not limited to:
 - a. Replace air filters and clean inside of ductwork and housings.
 - b. Replace significantly worn parts and parts that have been subject to unusual operating conditions.
 - c. Replace lamps that are burned out or noticeably dimmed by substantial hours of use.

END OF SECTION 01 5000

**SECTION 01 6000
MATERIALS AND EQUIPMENT**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements governing the Contractor's selection of products for use in the Project.
- C. The Contractor's Construction Schedule and the Schedule of Submittals are included under Section 01 3300 - Submittals.
- D. Standards: Refer to Section 01 4219 - Reference Standards and Definitions for applicability of industry standards to products specified.

1.02 DEFINITIONS

- A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well recognized meanings in the construction industry.
 - 1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term, "product," includes the terms, "material," "equipment," "system," and terms of similar intent.
 - a. "Named Products" are items identified by manufacturer's product name, including make or model designation, indicated in the manufacturers published product literature that is current as of the date of the Contract Documents.
 - 2. "Materials" are products that are substantially shaped; cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.
 - 3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections such as wiring or piping.

1.03 SUBMITTALS

- A. Product List Schedule: Prepare a schedule showing products specified in a tabular form acceptable to the Architect. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.
 - 1. Coordinate the product list schedule with the Contractor's Construction Schedule and the Schedule of Submittals.
 - 2. Form: Prepare the product listing schedule with information on each item tabulated under the following column headings:
 - a. Related Specification Section number.
 - b. Generic name used in Contract Documents.
 - c. Proprietary name, model number and similar designations.
 - d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date, or time span of delivery period.
 - 3. Initial Submittal: Within twenty (20) days after date of commencement of the Work, submit three (3) copies of an initial product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 - a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.
 - 4. Completed Schedule: Within thirty (30) days after date of commencement of the Work, submit three (3) copies of the completed product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.
 - 5. Architect's Action: The Architect will respond in writing to the Contractor within two (2) weeks of receipt of the completed product list schedule. No response within this time

period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents. The Architect's response will include the following:

- a. A list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.04 QUALITY ASSURANCE

- A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.
 1. When specified products are available only from sources that do not or cannot produce a quantity adequate to complete project requirements in a timely manner, consult with the Architect for a determination of the most important product qualities before proceeding. Qualities may include attributes relating to visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources that produce products that possess these qualities, to the fullest extent possible.
- B. Compatibility of Options: When the Contractor is given the option of selecting between two or more products for use on the Project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.
- C. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturers or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.
 1. Labels: Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.
 2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:
 - a. Name of product and manufacturer.
 - b. Model and serial number.
 - c. Capacity.
 - d. Speed.
 - e. Ratings.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.
 1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.
 3. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.
 4. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.
 5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.
 6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.
 7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.
 - 1. Provide products complete with all accessories, finished ends, closure panels, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.
 - 2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.
- B. Product Selection Procedures: Product selection is governed by the Contract Documents and governing regulations, not by previous Project experience. Procedures governing product selection include the following:
 - 1. Proprietary Specification Requirements: Where only a single product or manufacturer is named, provide the product indicated. No substitutions will be permitted.
 - 2. Semi-proprietary Specification Requirements: Where two (2) or more products or manufacturers are named, provide one of the products indicated. No substitutions will be permitted.
 - a. Where products or manufacturers are specified by name, accompanied by the term, "or equal," or "or approved equal," comply with the Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
 - 3. Non-Proprietary Specifications: When the Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.
 - 4. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.
 - 5. Compliance with Standards, Codes and Regulations: Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.
 - 6. Visual Matching: Where Specifications require matching an established Sample, the Architect's decision will be final on whether a proposed product matches satisfactorily.
 - a. Where no product available within the specified category matches satisfactorily and also complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category, or for noncompliance with specified requirements.
 - 7. Visual Selection: Where specified product requirements include the phrase "...as selected from manufacturer's standard colors, patterns, textures...", or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Architect will select the color, pattern and texture from the product line selected.

PART 3 - EXECUTION

3.01 INSTALLATION OF PRODUCTS

- A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.
 - 1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at date of Substantial Completion.

END OF SECTION 01 6000

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**SECTION 01 7123
FIELD ENGINEERING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and general provisions of the contract, including General Conditions and other Division 1 - General Requirements Specification sections, apply to this section.
- B. General: This Section specifies administrative and procedural requirements for field engineering services, including, but not necessarily limited to, the following:
 - 1. Land Survey Work.
 - 2. Civil Engineering Services.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. The Owner will identify existing control points and property line corner stakes.
- B. Before proceeding to lay out the Work, Contractor shall verify layout information shown on the Drawings, in relation to the property survey and existing benchmarks. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
 - 1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points, or requirements to relocate reference points because of necessary changes in grades or locations.
 - 2. Promptly replace any lost or destroyed project control points. Base replacements on the original survey control points.
 - 3. Establish and maintain a minimum of two (2) permanent benchmarks on the site, referenced to data established by survey control points.
 - a. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
 - 4. Existing utilities and equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction.
 - a. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer and water service piping.
- C. Preparation of partial payments, and shop drawings review. All costs of these items are under a separate contract paid for by the Owner.
 - 1. Construction staking will include the following:
 - 2. Stake rough grade.
 - 3. Blue top pads.
 - 4. Red top street, parking lot subgrade.
 - 5. Provide sewer stakes.
 - 6. Provide water line and fire hydrant stakes.
 - 7. Provide power installation stakes.
 - 8. Stake curb & gutter.
 - 9. Blue top street and parking lot finished gravel.
 - 10. Stake property corners.
- D. Construction Related Services: Jones & DeMille Engineering will provide construction related services including construction staking, site visits, and construction progress meetings. Refer to Section 01 5600 - Construction Staking for additional requirements.

3.02 PERFORMANCE

- A. Working from lines and levels established by the property survey, establish benchmarks and markers to set lines and levels of construction and elsewhere as needed to properly locate

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each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions, refer to Supplementary General Conditions.

1. Advise entities engaged in construction activities, of marked lines and levels provided for their use.
 2. As construction proceeds, check every major element for line, level and plumb.
- B. Site Improvements: Locate and lay out site improvements, including pavements, stakes for grading, fill and topsoil placement, utility slopes and invert elevations by instrumentation and similar appropriate means.
- C. Building Lines and Levels: Locate and lay out batter boards for structures, building foundations, column grids and locations, floor levels and control lines and levels required for mechanical and electrical work.
- D. Existing Utilities: Adjust, move or relocate existing structures, utility poles, lines, services or other appurtenances located in, or affected by construction. Coordinate with local authorities having jurisdiction.

END OF SECTION 01 71 23

**SECTION 01 7329
CUTTING AND PATCHING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and general provisions of the contract, including General Conditions and other Division 1 - General Requirements Specification sections, apply to this section.
- B. This Section specifies administrative and procedural requirements for cutting and patching.
- C. Refer to other Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - 1. Requirements of this Section apply to mechanical and electrical installations. Refer to Division 23 - HVAC and Division 26 - Electrical Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.02 SUBMITTALS

- A. Cutting and Patching Proposal: Where approval of procedures for cutting and patching is required before proceeding, submit a proposal describing procedures well in advance of the time cutting and patching will be performed and request approval to proceed. Include the following information, as applicable, in the proposal:
 - 1. Describe the extent of cutting and patching required and how it is to be performed; indicate why it cannot be avoided.
 - 2. Describe anticipated results in terms of changes to existing construction; include changes to structural elements and operating components as well as changes in the building's appearance and other significant visual elements.
 - 3. List products to be used and firms or entities that will perform work.
 - 4. Indicate dates when cutting and patching is to be performed.
 - 5. List utilities that will be disturbed or affected, including those that will be relocated and those that will be temporarily out-of-service. Indicate how long service will be disrupted.
 - 6. Where cutting and patching involves addition of reinforcement to structural elements, submit details and engineering calculations to show how reinforcement is integrated with the original structure.
 - 7. Approval by the Architect to proceed with cutting and patching does not waive the Architect's right to later require complete removal and replacement of a part of the Work found to be unsatisfactory.

1.03 QUALITY ASSURANCE

- A. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would reduce their load-carrying capacity or load-deflection ratio.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following structural elements:
 - a. Foundation construction.
 - b. Bearing and retaining walls.
 - c. Structural steel.
 - d. Miscellaneous structural metals.
 - e. Equipment supports.
 - f. Piping, ductwork, vessels and equipment.
- B. Operational and Safety Limitations: Do not cut and patch operating elements or safety related components in a manner that would result in reducing their capacity to perform as intended, or result in increased maintenance, or decreased operational life or safety.
 - 1. Obtain approval of the cutting and patching proposal before cutting and patching the following operating elements or safety related systems:
 - a. Air, fire or smoke barriers.
 - b. Water, moisture, or vapor barriers.
 - c. Membranes and flashings.

- C. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces, in a manner that would, in the Architect's opinion, reduce the building's aesthetic qualities, or result in visual evidence of cutting and patching. Remove and replace work, cut and patched in a visually unsatisfactory manner.

1.04 MATERIALS

- A. Use materials that are identical to existing materials. If identical materials are not available or cannot be used where exposed surfaces are involved, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Prior to installation of these materials, consult with architect for final approval. Use materials whose installed performance will equal or surpass that of existing materials.

1.05 INSPECTION

- A. Before cutting existing surfaces, examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed. Take corrective action before proceeding if unsafe or unsatisfactory conditions are encountered.

1.06 PREPARATION

- A. Temporary Support: Provide temporary support of work to be cut, if required.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
- C. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

1.07 PERFORMANCE

- A. General: Employ skilled workmen to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction or adjoining construction using methods least likely to damage elements to be retained. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.
 - 1. In general, where cutting is required use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots neatly to size required with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Cut through concrete and masonry using a cutting machine such as carborundum saw or diamond core drill.
 - 4. Comply with requirements of applicable Sections of Division 2-Site Construction where cutting and patching requires excavating and back filling.
- C. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
 - 1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
 - 2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Where removal of walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new matching materials, to achieve uniform color and appearance.
 - a. Where patching occurs in a smooth painted surface, extend final paint coat over entire area containing the patch, after the patched area has received primer and second coat.
 - 4. Patch, repair or re-hang ceilings as necessary to provide an even plane surface of uniform appearance.

1.08 CLEANING

- A. Thoroughly clean areas and spaces where cutting and patching is performed or used as access. Remove completely paint, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition. Refer also to Section 01 74 13, "Cleaning Up".

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01 73 29

**SECTION 01 7413
CLEANING UP**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. Provide all cleaning up and disposals as specified, complete.

1.02 BUILDING CLEAN-UP AND DISPOSAL

- A. The following requirements apply to the Work of all trades and to every Section of the Specifications as it applies to their Work.
- B. All exterior walls, glazing, windows and doors, etc. to be washed and left in clean condition.
- C. All areas shall be kept broom clean on a weekly basis. Pay applications will not be approved if the job site is not kept clean as required under this Section.
- D. In addition to general broom cleaning do the following special cleaning for each trade during the Work; remove crates, cartons, rubbish and other flammable waste; clean electrical and mechanical rooms, pipe and duct shafts, chases and furred spaces.
- E. Glass Cleaning: Remove all labels. Wash, rinse and dry glass at frequent intervals particularly during construction. Use soft, clean, grit-free cloths, mild soap, detergent or a slightly acidic cleaning solution; follow immediately with clean rinse water, and prompt removal of excess rinse water with a clean squeegee. Remove grease and glazing materials with commercial solvents such as xylene, toluene, mineral spirits or naphtha and follow with normal wash and rinse. Be careful not to damage glazing or insulating unit seals by over-generous application of strong solvents. Avoid scratching glass. Broken glass or scratched glass shall be replaced at no cost to Owner.
- F. Clean and polish woodwork.
- G. Clean and polish hardware for all trades; this shall include removal of stains, dust, dirt, paint and the like.
- H. Remove spots, soil and paint from tile and wash (acid cleaning agents shall be used on tile.)
- I. Clean fixtures and equipment; remove stains, dirt, dust or paint.
- J. Remove temporary floor protection. Wash, wax and polish floor prior to final inspection.
- K. Clean exterior and interior metal surfaces, including doors, windows, of stains, dust, dirt, paint and the like; polish; leave without fingermarks and other blemishes.
- L. During progress of the Work, the premises shall be periodically kept free of all debris and waste materials resulting from the Work.
- M. All cabinetry shall be thoroughly cleaned, inside and out, all counter tops cleaned and all stains, manufacturer's identification marks, etc. removed.
- N. All roof areas and drains shall be kept free of sheet metal scraps, screws, wire and other miscellaneous items related to roof mechanical and electrical construction.

1.03 SITE CLEAN-UP AND DISPOSAL

- A. All asphalt, sidewalks, curb and gutter, waterways and catch basins shall be kept clean and at final completion be broom cleaned.

PART 2 - PRODUCTS

2.01 CLEANING MATERIALS AND EQUIPMENT

- A. Provide all required personnel, equipment and products needed to maintain specified standard of cleanliness.

PART 3 - EXECUTION

3.01 PROGRESS CLEANING

- A. General
 - 1. Retain all stored items in an orderly arrangement allowing maximum access, not impeding drainage or traffic, and providing the required protection of materials.
 - 2. Do not allow accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
 - 3. Provide adequate storage for all items, awaiting removal from the job site, observing all requirements for fire prevention and protection of the ecology
- B. Site
 - 1. Weekly, and more often if necessary, inspect all arrangements of material stored on the site; restack, tidy, or otherwise service. All arrangements to meet the requirements of paragraph 3.01.A.1 above.
 - 2. Maintain the site in a neat and orderly condition at all times to the satisfaction of the Owner/Architect.

3.02 SITE DUST CONTROL

- A. Maintain continuous cleaning and wetting procedures to control dust pollution at project site and haul routes as required by governing authorities and the Contract Documents. Use power sweepers for street cleaning.
- B. Schedule cleaning so that resultant dust and contaminants will not fall on wet or newly coated surfaces.

END OF SECTION 01 7413

**SECTION 01 7700
PROJECT CLOSEOUT**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies administrative and procedural requirements for Project Closeout, including but not limited to:
 - 1. Observation procedures.
 - 2. Project record document submittal.
 - 3. Submittal of required AIA documents.
 - 4. Pre-Substantial Completion procedures.
 - 5. Substantial Completion procedures.
 - 6. Final Observation procedures.
 - 7. Operating and Maintenance Manual submittal

1.02 ONE YEAR WARRANTY OBSERVATION

- A. Prior to the end of the first year of building occupancy, and preceding the expiration of the one (1) year warranty period, the Contractor agrees to meet with the Architect and the Owner's representative at the site to review and identify any deficiencies that remain to be corrected as a part of the warranty of the Contractor or his subcontractors under the Contract.

PART 2 - PRODUCTS

2.01 OPERATION & MAINTENANCE MANUALS

- A. This section applies to O & M Manuals for architectural items and any other miscellaneous items not included in the mechanical, plumbing and electrical sections. Refer to the mechanical and electrical specifications for instructions relating to O & M Manuals for those items.
- B. The operating and maintenance manuals shall be as follows:
 - 1. One (1) electronic copy in PDF format. These shall be submitted to the architect for distribution to the Owner.
 - 2. The manuals shall include warranties and bonds (refer to Section 01 7833 - Warranties and Bonds), forms of guarantee (refer to Section 01 7836 - Form of Guarantee), equipment and system performance test reports, record product data, and certificates of training given to the Owner's Representatives.

PART 3 - EXECUTION

3.01 FIRE MARSHAL INSPECTIONS

- A. At the seventy percent (70%) Completion inspection the Fire Department will check all of, but not limited to the following:
 - 1. Fire department access.
 - 2. Fire hydrant placement and operation.
 - 3. Exiting (any obstructions).
 - 4. Penetrations of structure (non-combustible).
 - 5. Heating procedure (fuel location and piping).
 - 6. Welding and cutting procedures.

3.02 PRE-SUBSTANTIAL COMPLETION

- A. Prior to requesting the Substantial Completion Observation, the Contractor shall complete the following:
 - 1. The General Contractor will prepare three-ring binder(s) (three (3) copies) containing all warranties, guarantees, certificates of training, certificates of receipt of maintenance stock items, maintenance and operations manuals, test and balance reports, etc. Use only high quality "D" ring binders and provide labels on the front and spine of the binders listing the job and contents. (Do not overfill binders - allow room for additional inserts in each

binder.)

- a. These manuals shall be delivered to the Architect for review for compliance to project requirements (allow a minimum of five (5) working days for Architect's review). If for any reason these manuals are not complete, the Substantial Completion Observation will be canceled and not rescheduled until compliance is made - WITHOUT EXCEPTION.
2. The Contractor shall prepare a "punch-list" of outstanding items and deficiencies to be completed.
3. The Contractor shall submit the "punch-list" of outstanding items and deficiencies to the Architect with verification that it has been completed.
4. The Contractor shall perform a complete test of the fire alarm, fire protection, and life safety systems. The Contractor shall coordinate this test with the Architect and Owner prior to scheduling the Substantial Completion Observation. The electrical, fire alarm, and fire protection subcontractors shall be present at this test. This test shall be repeated as required until all elements of the test are acceptable.
5. An inspection of the fire sprinkler system is conducted noting coverage, and completeness of the riser. Testing is also conducted to insure its function. The fire alarm system is completely checked for operation and adequate coverage. This also includes the twenty-four (24) hour battery test. Emergency lighting and exit signs as well as door operation and hardware are also checked. The
6. Mechanical systems are inspected and hood fire suppression system is also inspected and tested, including fire alarm tie-in and fuel shut-offs (if required). All special doors - such as roll-up doors or horizontal folding doors are inspected and tested. Inspectors also check to be sure appropriate certificates - where applicable - have also been obtained.
7. Conduct Owner training for all systems so specified, including but not limited to the following:
 - a. Finish Hardware.
 - b. Mechanical System
 - c. Plumbing System.
 - d. Fire Protection Sprinkler.
 - e. Electrical System including Fire Alarm, Intercom, Telephone, etc.
8. Obtain and submit for Mechanical Engineer's review the Test and Balance Report. Refer to Mechanical Specifications for required review time.
- B. Prior to the Substantial Completion Observation, the Contractor must assure that the project is complete and ready for inspection. Thus, the General Contractor should be the only one who sets up the observation, arranging for all the participants to be there.
- C. No occupancy is permitted until permission is granted by city officials.

3.03 SUBSTANTIAL COMPLETION OBSERVATION

- A. Preliminary Procedures: Before requesting the Substantial Completion Observation the General Contractor shall complete the following:
 1. Advise Owner of any pending insurance change-over requirements.
 2. Submit record drawings, final record information, etc. as required by this Specification.
 3. Deliver maintenance stock items to Owner with signed acknowledgment bound with guarantees.
 4. Discontinue or change over and remove temporary facilities from the site, along with construction tools, mock-ups, and similar elements.
 - a. Refer to Section 01 5000 - Temporary Facilities paragraph 3.05.
 5. Complete final clean up requirements. Touch-up and otherwise repair and restore marred exposed finishes.
 6. The Substantial Completion Observation is the date on which the Architect's office will prepare a punch list of items remaining to be finished. Mechanical and Electrical Engineers will also prepare a punch list of incomplete items.
 - a. The Substantial Completion Observation requires the participation of the following subcontractors:
 - 1) Electrical Contractor.

- 2) Temperature Control Contractor.
- 3) Fire Alarm Contractor.
- 4) Mechanical Contractor.
- 5) Test and Balance Contractor.
- 6) General Contractor.
- b. In addition to the above participants the following persons shall attend:
 - 1) Owner
 - 2) Building Inspectors.
 - 3) Architect.
 - 4) Project Engineers.
- c. The General Contractor shall coordinate attendance OF ALL the above listed subcontractors, and the Architect shall coordinate the remainder as required.
- B. Observation Procedures: On receipt of a request for this Observation, the Architect will either proceed with the same or advise the Contractor of unfulfilled requirements. The Architect will prepare the Certificate of Substantial Completion following this observation, or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.
 1. The Contractor will be allowed thirty (30) days to complete items noted on the punch lists.
 2. The Architect will repeat the observation only when assured that the Work has been substantially completed.
 3. Results of this Observation will form the basis of requirements for final acceptance.
 4. When the Substantial Completion Certificate is awarded, the General Contractor shall be prepared to obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities.

3.04 FINAL ACCEPTANCE OBSERVATION

- A. Preliminary Procedures: Contractor to request date for Final Acceptance Observation. Before requesting Final Acceptance Observation for certification of final acceptance and final payment, the Contractor shall complete the following.
 1. Submit the final payment request and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
 2. Submit an updated final statement accounting for final additional changes to the Contract Sum.
 3. Submit a certified copy of the Architect's final observation list of items to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance.
 4. Submit a final liquidated damages settlement statement.
 5. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 6. AIA Documents: Architect to provide the following AIA documents for the Contractor to complete and forward to the Owner. Samples are included and follow this section.
 - a. AIA Document G706-1994, Contractor's Affidavit of Payment of Debts and Claims.
 - b. AIA Document G706A-1994, Contractor's Affidavit of Release of Liens.
- B. Re-Observation Procedure: The Architect will re-observe the Work upon receipt of notice that the Work, including observation list items from earlier observations, has been completed, except items whose completion has been delayed because of circumstances acceptable to the Architect. The Contractor shall furnish the Architect a copy of the Substantial Completion Observation Punch List with all items marked as completed, except as noted above, at the time of scheduling the Final Observation.
 1. Upon completion of this observation, the Architect will advise the Contractor the project is acceptable and to proceed with final project closeout as listed above, or advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.

2. If necessary, the Architect will conduct additional re-observations as required to obtain final acceptance. Each subsequent re-observation will be back charged against the project Contract for the Architect's, Engineer's, and Owner's time.

3.05 PROPOSED TIME SCHEDULE

- A. The Architect is suggesting the following dates for Project Closeout. These dates are to be considered latest possible dates to meet the Owner's requirements. Earlier dates are preferred.
November 1, 2019 - Substantial Completion Observation.
November 15, 2019 - Final Acceptance Observation.

3.06 RECORD DOCUMENT SUBMITTALS

- A. General: Do not use record documents for construction purposes. Protect from deterioration and loss in a secure, fire resistive location. Provide access to record documents for the Architect's reference during normal working hours.
- B. Record Drawings: Maintain a clean, undamaged set of blue or black line white prints of Contract Drawings and Shop Drawings. (Note: Record Drawings and Specifications shall have all Addenda and Change Order items pasted into the documents.) Mark the set to show the actual installation where the installation varies substantially from the Work as originally shown. Mark whichever drawing is most capable of showing conditions fully and accurately; where Shop Drawings are used, record a cross-reference at the corresponding location on the Contract Drawings. Give particular attention to concealed elements that would be difficult to measure and record at a later date.
 1. Mark record sets with red erasable pencil; use other colors to distinguish between variations in separate categories of the Work.
 2. Mark new information that is important to the Owner, but was not shown on Contract Drawings or Shop Drawings.
 3. Note related Change Order numbers where applicable.
 4. Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on the cover of each set.
 5. Upon completion of the Work and a minimum of five (5) days prior to scheduling the Substantial Completion Observation, submit Record (As-Built) Drawings to the Architect for review for the Owner's records. Incomplete Record (As-Built) Drawings will not be accepted and will delay the Substantial Completion Observation.
- C. Record Specifications: Maintain one (1) complete copy of the Project Manual, including addenda, and one copy of other written construction documents such as Change Orders and modifications issued in printed form during construction. (Note: Addenda and Change Order items shall be pasted into Specifications in appropriate sections.) Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications. Give particular attention to substitutions, selection of options and similar information on elements that are concealed or cannot otherwise be readily discerned later by direct observation. Note related record drawing information and Product Data.
 1. Upon completion of the Work and a minimum of five (5) days prior to scheduling the Substantial Completion Observation, submit record Specifications to the Architect for review for the Owner's records. Incomplete record Specifications will not be accepted and will delay the Substantial Completion Observation.
- D. Record Product Data: Maintain one copy of each Product Data submittal. Mark these documents to show significant variations in actual Work performed in comparison with information submitted. Include variations in products delivered to the site, and from the manufacturer's installation instructions and recommendations. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned later by direct observation. Note related Change Orders and mark-up of record drawings and Specifications. (Note: Product submittals may be submitted in high quality file boxes or as rolled documents if larger than 11"x17". Submittals shall be filed according to specification sections and clearly identified.)

1. Upon completion of mark-up of record Product Data and a minimum of five (5) days prior to scheduling the Substantial Completion Observation, submit complete set of record Product Data to the Architect for review for the Owner's records. Incomplete record Product Data will not be accepted and will delay the Substantial Completion Observation.

END OF SECTION 01 7700

**SECTION 01 7833
WARRANTIES**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and other Division 1 – General Requirements Specification Sections, apply to this Section.
- B. This Section specifies general administrative and procedural requirements for warranties required by the Contract Documents, including manufacturer's standard warranties on products and special warranties.
 - 1. Refer to the General Conditions for terms of the Contractor's special warranty of workmanship and materials.
 - 2. General closeout requirements are included in Section 01 77 00, "Project Closeout."
 - 3. Specific requirements for warranties for the Work and products and installations that are specified to be warranted are included in the individual Sections of Divisions 2 through 33.
 - 4. Certifications and other commitments and agreements for continuing services to Owner are specified elsewhere in the Contract Documents.
- C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products, nor does it relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

1.02 DEFINITIONS

- A. Standard Product Warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.
- B. Special Warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1.03 WARRANTY REQUIREMENTS

- A. Related Damages and Losses: When correcting warranted Work that has failed, remove and replace other Work that has been damaged as a result of such failure or that must be removed and replaced to provide access for correction of warranted Work.
- B. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.
- C. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefitted from use of the Work through a portion of its anticipated useful service life.
- D. Owner's Recourse: Written warranties made to the Owner are in addition to implied warranties, and shall not limit the duties, obligations, rights and remedies otherwise available under the law, nor shall warranty periods be interpreted as limitations on time in which the Owner can enforce such other duties, obligations, rights, or remedies.
 - 1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selections to products with warranties not in conflict with requirements of the Contract Documents.
- E. The Owner reserves the right to refuse to accept Work for the Project where a special warranty, certification, or similar commitment is required on such Work or part of the Work, until evidence is presented that entities required to countersign such commitments are willing to do so.

1.04 SUBMITTALS

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion.

14324 / State Bank of Southern Utah - Gunnison Branch	01 7833 - 1	WARRANTIES

1. The warranty period does not begin when a designated portion of the Work is completed, but on the date when a Certificate of Substantial Completion is issued.
- B. Forms for warranties are included with Section 01 78 36, "Form of Guarantee." Prepare a written document utilizing the form, ready for execution by the Contractor, or the Contractor and Subcontractor, Supplier or Manufacturer.
 1. Refer to individual Sections of Divisions 2 through 33 for specific content requirements, and particular requirements for submittal of special warranties.
- C. Form of Submittal: At Final Completion, compile three (3) copies of each required warranty properly executed by the Contractor, or by the Contractor, subcontractor, supplier, or manufacturer. Organize the warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1.05 GUARANTEES

- A. Submit written warranties to the Architect prior to the date certified for Substantial Completion.
 1. Warranties shall be on the form included or other forms as identified in the individual sections of Divisions 2 through 33.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 01 7833

**SECTION 01 7836
FORM OF GUARANTEE**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS: DRAWINGS AND GENERAL PROVISIONS OF THE CONTRACT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS AND OTHER DIVISION 1 – GENERAL REQUIREMENTS SPECIFICATION SECTIONS, APPLY TO THIS SECTION.

1.02 SUMMARY

- A. The Contractor will be required to guarantee all labor, materials, components and workmanship for a period of one (1) year from the date of Substantial Completion of the building or as indicated in each Section. A written guarantee shall be provided, duly executed by an authorized representative of the Contractor.
 - 1. In addition to the guarantee of the Contractor, each subcontractor, as required by the various Sections of this Specification, shall furnish a written guarantee for materials, components and workmanship relating to the Work of their subcontract.
 - a. Guarantee Forms furnished by Subcontractors for periods less than required by Specifications are unacceptable.
 - 2. Each guarantee shall be in the form bound herein altered as necessary to accommodate more stringent language of their various Sections of this Specification.

1.03 FORMS OF GUARANTEE

- A. Form of Guarantee.

FORM OF GUARANTEE

Project: _____

—

Owner: _____

Contractor: _____

Date: _____

—

Know all persons by these presents that, in consideration of my (our) having been awarded the Contract for complete furnishing and installation of: (List specific section and extent of work.)

in conformity with the Drawings and Specifications prepared by Naylor Wentworth Lund Architects, P.C., 163 West 1600 South, Suite 1, St. George, Utah, 84770.

We do hereby agree to return to the project within three (3) working days upon notification by the Owner that materials and/or workmanship has proven faulty and to repair, replace or otherwise make good to the full satisfaction of the Owner and/or Architect all such work (including any adjacent work disturbed in completing required work under this warranty) without cost to the Owner.

This agreement shall remain in full force and effect until _____ year(s) from date of Substantial Completion established for the project by the Architect on the Certificate of Substantial Completion.

Authorized Signature _____

Title _____

Address

Contractor _____

—

Telephone _____

END OF SECTION 01 7836

**SECTION 02 3200
GEOTECHNICAL INVESTIGATION**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Geotechnical Investigation
 - 1. The Contractor shall examine the attached Geotechnical Investigation accompanying addenda thereto, if any. This investigation is bound in this Specification for reference and follows as part of this Section 02 3200 - Geotechnical Investigation. The Contractor shall become fully aware of the natural conditions that exist and are noted in this investigation.
 - 2. The Contractor shall be aware that due to the nature of the existing subsoil, special precautions are noted and should be observed.
- C. Related Work
 - 1. Additional specifications and requirements are listed in Sections 02 3200 - Geotechnical Investigation, 31 2210 - Building Excavation and Backfill and 31 2220 - Site Excavation and Backfill and in some cases require a greater standard or additional parameters than are listed in the Geotechnical Investigation Report. In all cases the better quality or greater quantity of work shall apply.

1.02 GENERAL SITE INFORMATION

- A. The Contractor shall examine the site personally to ascertain the state thereof and to understand the complexities of the Work. The Contractor shall compare the site with the drawings and the Geotechnical Investigation, and become familiar with the conditions of the premises, the actual elevations, existing obstructions, areas of work and other conditions that would affect the completion of the Work.
- B. The Contractor shall observe soil conditions throughout the duration of the site work operations and shall notify the Architect and Geotechnical Engineer of record, of any deviation in actual soil conditions from those expected based on the Geotechnical Investigation bound herein.
- C. Excavation shall include, without classifications, the removal of all natural soils, previously placed fill soils construction debris, collapsible soils and excessively soft or disturbed soils encountered, that would interfere with the proper execution and completion of the work. It is anticipated that collapsible soil and previously placed fill removal and replacement will be expected during excavation of onsite underground utilities, asphaltic pavement, site excavation and mass building excavation.
 - 1. Requirements of this section apply to all excavation work specified in the following Sections:
 - a. Section 31 2210 - Building Excavation and Backfill
 - b. Section 31 2220 - Site Excavation and Backfill
 - c. Section 33 4000 - Storm Drain System
 - d. Section 33 3000 - Sanitary Sewer System
 - e. Section 33 1000 - Water System

PART 2 -PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 02 32 00

GEOTECHNICAL INVESTIGATION REPORT

Prepared for:

State Bank of Southern Utah –
Gunnison Branch
Attn: Brady Shakespear
1535 South 100 West
Richfield, Utah 84701

May 18, 2021

State Bank of Southern Utah – Gunnison Branch



Prepared by:



795 East Factory Drive
St. George, UT 84790

Landmark Project No: 21361



May 18, 2021

State Bank of Southern Utah – Gunnison Branch
Attn: Brady Shakespear
1535 South 100 West
Richfield, Utah 84701

Subject: Geotechnical Investigation Report
State Bank of Southern Utah – Gunnison Branch
Gunnison, UT
Landmark Project No.: 21361

Brady,

As requested, we have completed our Geotechnical Investigation for the above noted project. Our geotechnical recommendations, along with our field and laboratory data are presented in this report.

Our field investigation consisted of the excavation of five test pits across the site. Test pits extended to a depth of 10 feet below the existing ground surface. Site grading and earthwork recommendations are detailed in Section 5.0 of this report. Foundation recommendations are found in Section 6.0 of this report.

Landmark has great interest in providing materials testing and special inspection services during the construction phase of this project. If you advise us of the appropriate time to discuss these engineering services, we will be pleased to meet with you at your convenience.

Please feel free to contact our office at (435) 986-0566 if you have any questions.

Sincerely,
LANDMARK TESTING AND ENGINEERING

Steven Wells, P.E.
Geotechnical Manager

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GEOTECHNICAL INVESTIGATION REPORT STATE BANK OF SOUTHERN UTAH – GUNNISON BRANCH GUNNISON, UTAH

FIGURE 1:	VICINITY MAP
FIGURE 2:	SITE MAP
FIGURES 3 - 5:	TEST PIT LOGS
FIGURE 6:	UNIFIED SOIL CLASSIFICATION SYSTEM

1.0 INTRODUCTION

This report presents the results of Landmark Testing & Engineering's geotechnical investigation for the proposed State Bank of Southern Utah located near the southwest corner of Main Street (U.S Highway 89) and West 100 South Street in Gunnison, Utah. Figure 1 is a Vicinity Map showing the project location relative to surrounding features. Figure 2 is a Site Map showing the proposed project site and the approximate locations of the test pits completed for this investigation.

This investigation was completed to assist in developing opinions and recommendations concerning site earthwork and foundation design.

2.0 PROPOSED CONSTRUCTION

We understand that the proposed building will be a single-story, masonry building with associated paved parking. Additionally, a gazebo will be constructed near the southwest corner of the site. Wall loads were not provided at the time of this report, however we expect wall loads to be on the order of 3 to 5 kips and column loads to be on the order of 20 kips. Traffic indices of 5.5 for parking areas and 7.0 for heavy traffic areas were used for pavement design.

Any significant changes to the anticipated development should be reviewed by Landmark to evaluate the continued applicability of the recommendations contained in this report.

3.0 SITE SETTING

3.1 SURFACE CONDITIONS

The project site is located on the southwest corner of Main Street (U.S Highway 89) and West 100 South Street in Gunnison, Utah. The site is relatively flat with the surface covered by gravel. There is currently a variety of construction equipment and old, abandoned cars throughout the project site. There is also a shed-type structure and concrete loading dock near the northwest corner of the property. Based on information from a local excavation contractor / resident of Gunnison, a gas station was once located near the southern portion of the site. The footings of the previous gas station were encountered during our investigation. The contractor/resident also informed us that the underground gas tanks have been removed.

3.2 GEOLOGIC SETTING

According to the Utah Geological Survey, the soils on-site are mapped as coalesced alluvial fan deposits (Holocene to Pliocene, QTcf) consisting of "Silt, sand granules, pebbles, cobbles, and sparse boulders."¹ The material encountered in our test pits during our investigation were consistent with the geologic maps for the project area.

1 Interactive Geologic Map Portal, Retrieved May 17, 2021, from Utah Geologic Survey, <https://geology.utah.gov/apps/intgeomap>

3.3 SEISMICITY

Seismic site class “D” was chosen for this site based on geologic mapping of the site and material encountered in our test pits. Seismicity at the site was determined using the Structural Engineers Association (SEA), OSHPD Seismic Design Maps website. The following values are presented to assist with seismic design:

- Latitude = 39.15317° North, Longitude = 111.81870° West
- Risk Category II
- Site Class = D, Stiff Soil, based on ASCE 7-16 (Table 20.3.1) as referenced in 2018 IBC 1613.3.2

Period (sec)	S _a (g)	Site Class
0.2	S _S = 0.669	B / C
1.0	S ₁ = 0.207	B / C
0.2	S _{DS} = 0.564	D
1.0	S _{D1} = null*	D

*Reference ASCE Section 11.4.8

(2016 ASCE 7-16, SEA, Structural Engineers Association, <https://seismicmaps.org/>)

As per section 20.1 of ASCE 7-16, “The soil shall be classified in accordance with Table 20.3-1 and section 20.3 based on the upper 100 feet of the site profile.” However, section 20.1 continues, “Where site specific data are not available to a depth of 100 feet, appropriate soil properties are permitted to be estimated by the registered design professional preparing the soil investigation report based on known geologic conditions.” Based on the material encountered in our test pits and the mapped geology, it is the opinion of Landmark Testing and Engineering that the soils on site classify as Site Class D.

3.4 GEOLOGIC HAZARDS

Fault Rupture

The trace of the Japanese and Cal Valleys faults are located approximately 9.0 miles west of the site, the trace of Wasatch fault zone is located approximately 5.5 feet north of the site and the White Mountain area faults are located approximately 17.0 feet east of the site. These faults displace late Quaternary sediments and are considered active.² Strong ground motion associated with movement along the Japanese and Cal Valley faults, the Wasatch fault zone, the White Mountain faults or other faults associated with the Intermountain Seismic Belt is possible, however, the potential for surface fault rupture is considered low.

2 Utah Geological Survey, Utah Quaternary Fault and Fold Map, Retrieved May 17, 2021, from Utah Geologic Survey, <https://geology.utah.gov/apps/intgeomap>

Liquefaction

Liquefaction is the sudden loss of shear strength in the soil due to the build-up of excess pore water pressure.³ This can occur when the soil is subjected to intense shaking such as during a seismic event. The soils that are most susceptible to liquefaction are loose, saturated sandy soils with a low fines content (material passing the #200 sieve).

The soils encountered during our investigation generally consisted of medium dense silty sand with varying amounts of gravel. Due to the lack of groundwater and density of the on-site soils, we believe the liquefaction potential at the project site is low. A liquefaction study is beyond the scope of this report.

4.0 INVESTIGATION

4.1 FIELD INVESTIGATION

To investigate the subsurface soil conditions, five test pits designated as TP-1 through TP-5, were excavated with a CASE 580 backhoe across the project site. The locations of the test pits relative to the project site are shown on the Site Map, Figure 2.

Soils encountered during our investigation consisted of 2 to 4 feet of undocumented fill underlain by medium dense to dense silty sand with varying amounts of gravel. The undocumented fill consisted of medium dense silty sand with gravel with various amounts of asphalt debris. The footings from the previous gas station structure that was once located on the southern end of the site were encountered approximately 2 feet bgs in test pit TP-2.

A detailed description of the soils encountered in our test pits are shown on the test pit logs presented on Figures 3 through 5. A key to the descriptions shown on the logs is presented on Figure 6.

4.2 LABORATORY TESTING

Soil samples from the test pits were taken to our St. George laboratory for testing. Tests performed on the samples included moisture content, sieve analyses, and a soluble sulfate test to classify and determine the physical characteristics of the on-site soils.

Sieve analyses tests classified the on-site soils as silty sand and silty sand with gravel. The moisture content of the soils tested ranged between 8.1 and 12.8 percent.

One soluble sulfate test was performed on a sample taken from test pit TP-1 at 2 feet bgs. The soil contained 0.29 percent by mass of soluble sulfates, indicating the soil to be corrosive to concrete. Section 11.0 of this report provides recommendation for concrete in corrosive soils.

The laboratory data is shown on the test pit logs on Figures 3 through 5.

3 Coduto, Donald P. (1999), Geotechnical Engineering: Principles and Practices, Prentice Hall, Upper Saddle River, NJ

4.3 CONCLUSIONS

The soils encountered during our investigation consisted of undocumented fill underlain by silty sand with varying amounts of gravel. Groundwater was not encountered in our test pits at the time of our investigation. Footings from a gas station, that was once located on the southern end of the site, were encountered in test pit TP-2. To provide a consistent bearing surface for the structure, we recommend that all undocumented fill be removed within the building footprint and replaced to structural fill standards. General grading recommendations and foundation recommendations are provided in Section 5.0 and 6.0, respectively.

5.0 SITE GRADING AND EARTHWORK

5.1 GENERAL GRADING

Prior to general grading, we recommend that all vegetation and deleterious materials are removed. The site had sparse vegetation consisting of only a few weeds throughout the site at the time of the investigation.

Once the site has been stripped and grubbed of vegetation and cleared of all deleterious materials, we recommend that the undocumented fill within the proposed building footprint and other structurally loaded areas, such as the teller lanes, are over-excavated and removed down to native soils. Based on our investigation, undocumented fill is expected to extend to depths between approximately 2 to 4 feet bgs. Once the undocumented fill has been removed, we recommend that the upper 8 inches in the bottom of the excavation are scarified, moisture conditioned to within two percent of the optimum moisture content and compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D-1557. We recommend that the geotechnical engineer observe the over-excavation prior to backfilling procedures to confirm that all undocumented fill has been removed.

The excavated undocumented fill may be used as structure fill provided all deleterious material has been removed. Varying amounts of asphalt were encountered within the undocumented fill during our investigation. In areas where abundant amounts of asphalt and other types of debris are encountered and cannot be removed, we recommend that the existing undocumented fill be exported off site and replaced with imported, granular structural fill.

5.2 FILL PLACEMENT AND COMPACTION

All fill to be placed for support of footings, slabs-on-grade, or exterior concrete flatwork should be considered structural fill. All fill soils should be free from organics, debris, or other deleterious materials. We recommend that the footings be established on a minimum of 1 foot of granular structural fill with a maximum particle size of 6-inches overlying adequately compacted on-site native soils.

If needed, imported, granular fill should be well-graded, non-expansive, and free of organics and all deleterious materials. Soils used for granular, imported, structural fill should meet the following specifications and preferably would classify as gravel.

GRADATION	PERCENT PASSING
6- inch	100
3-inch	80-100
No. 200 sieve	10-25
ATTERBERG LIMITS	
Liquid Limit	30 or less
Plasticity Index	9 or less

Material not meeting the above requirements may be suitable for use as structural fill at the discretion of the geotechnical engineer. Samples of structural fill should be submitted for testing prior to being transported to the site.

Imported structural fill should be compacted to the following specifications.

FILL PLACEMENT AND COMPACTION	
Maximum lift thickness	8-inch (loose)
Minimum compaction	95% ASTM D-1557
Compacted Moisture Content	within 2% of optimum

Compaction of structural fill should be completed with equipment suitable for the conditions encountered in the field such that compaction requirements are met, including those areas that may be inaccessible to large rolling compactors. All structural fill should be evenly spread on a horizontal plane in eight-inch loose lifts. Each eight-inch lift of structural fill material placed at the site should be tested for compliance with the required relative compaction and moisture content prior to proceeding with additional lifts.

5.3 LIGHTLY LOADED ELEMENTS

Exterior concrete slabs on grade (sidewalks, curbs, gutters, and misc.) including the proposed gazebo should be established on a minimum of 6-inches of granular structural fill underlain by 8-inches of scarified and recompacted on-site soils. Sidewalks and curbs and gutters will need to be underlain by approved road base as per Gunnison City Standards.

Structural fill, including road base, should be compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D-1557.

5.4 CUT AND FILL SLOPES

It is recommended that permanent cut or fill slopes in on-site or imported soils be maintained at a slope of one vertical to two horizontal (1V:2H) or flatter unless structurally retained.

Grading of both cut and fill slopes should be such that surface water is directed away from the slopes and not concentrated on slopes or in unprotected channels. Construction procedures should ensure adequate compaction of slope faces. All excavations should conform to OSHA standards.

6.0 FOUNDATION & CONSTRUCTION CONSIDERATIONS

The following recommendations apply to conventional strip and spot footings. Footings should be established on a minimum of 1 foot of granular, structural fill underlain by adequately compacted on-site soils as indicated in section 5.0. Foundation excavations should be visually observed and tested by qualified personnel prior to placement of reinforcing steel or concrete. Additional foundation recommendations are subsequently presented.

DESCRIPTION	VALUE
Foundation Type	Continuous or spread footings
Bearing Material	Minimum 1 foot of granular, structural fill
Allowable Bearing Capacity	2,000 psf
Minimum embedment depth below finished grade	36 inches (for frost and confinement)
Minimum footing width	12 inches (continuous) for single story 24 inches (isolated spread)
Total estimated settlement	1-inch
Total differential settlement	less than 3/4 inch

The allowable bearing capacity is based upon dead load plus long-term live load. A one-third increase in allowable bearing capacity for short duration loads such as wind or seismic loads is permitted with the alternative load combinations given in Section 1605.3.2 of the IBC.

7.0 FLOOR SLABS

It is recommended that concrete floor slabs be constructed on a pad that has been prepared as previously indicated in section 5.0. A minimum of 4-inches of relatively free-draining material should be used beneath the slab in order to help distribute floor loads, break the rise of capillary water, and aid in the concrete curing process. Alternatively, 6 inches of road base may be used in place of the free draining-material. The thickness of the free-draining material may be included in the thickness of granular structural fill recommended in Section 5.0 of this report.

Concrete slabs should be designed using rebar reinforcement and frequent crack control joints to help control normal shrinkage and stress cracking. Concrete placement and curing should meet ACI⁴ requirements including following hot or cold weather placement recommendations, when appropriate. If a moisture-sensitive floor covering will be installed, we recommend that a vapor barrier be installed beneath the concrete slab. The moisture sensitivity of floor finishes, anticipated project conditions, and the potential effects of slab curling and cracking should be considered in determining if the barrier should be placed directly beneath the slab or beneath the free-draining gravel (see ACI 302.IR-96 for more information regarding vapor barrier location). If the vapor barrier is installed directly beneath the slab, measures should be taken to minimize excessive slab curl such as reduced joint spacing and use of a low shrinkage (low water-cement ratio) mix.

8.0 LATERAL EARTH PRESSURES

Lateral loads imposed on footings may be resisted by the development of passive earth pressures against the sides of footings and friction between the base of the footing and the supporting soils. Lateral earth pressure values are presented in the following table.

Case Evaluated	Soil Type	Value
Active	On-site soils	37 psf/ft
		62 psf/ft (with seismic)
At-Rest	On-site soils	56 psf/ft
Passive	On-site soils	391 psf/ft
		324 psf/ft (with seismic)
Coefficient of friction $\tan(\phi*0.6)$ where $\phi = 32$	Granular, Structural Fill	0.35

The lateral earth pressures presented do not include any safety factors except where the friction angle (ϕ) used to determine the coefficient of friction has been multiplied by 0.6 to account for smooth contact conditions. The pressures also assume horizontal backfill and that the backfill is in a drained condition with no build-up of hydrostatic pressure. The additional effects of sloping backfill, surcharge, structural loads and groundwater conditions should be included in calculating lateral earth pressures. Backfill should be placed in accordance with the requirements of structural fill except that backfill in landscape and areas that will not be subject to structural loadings may be reduced to 90% of the maximum dry density as determined by ASTM D-1557.

9.0 MOISTURE CONTROL

This soils report provides recommendations for site preparation and foundation design. Inadequate surface drainage or failure to control moisture will likely result in excessive differential movement and structural damage. The following moisture control measures are recommended:

1. The ground surface should be graded to drain surface water away from the buildings in all directions. A minimum grade of 5% in the first 10 feet is recommended. Impervious surfaces such as concrete walkways or asphalt pavement adjacent to the structure are effective in reducing the potential for water migration beneath foundations and slabs and should be considered in design. Impervious surfaces such as asphalt or concrete within 10 feet of the building foundation should be sloped a minimum of 2% away from the building.
2. Roof runoff should be collected, and downspouts should be designed to discharge collected water a minimum of 10 feet beyond the building footprint.
3. Inadequate compaction of utility trench backfill provides a conduit for water migration. All utility trenches within the building footprint and extending 5 feet beyond the footprint should be backfilled with structural fill similar to that approved for the foundations. Backfill adjacent to structures should be compacted to at least 90 percent of the maximum dry density as determined by ASTM D-1557 and the minimum slope requirements should be followed. Backfill beneath structures should be compacted to at least 95% of the maximum dry density.
4. Grading should be such that surface water is directed away from all cut and fill slopes and collected only in channels protected against erosion. Water should not be allowed to pond on-site.

It should be emphasized that final grading and landscaping generally occurs after construction of the structure and observation of these features is outside of normal geotechnical inspection and observation. The owner/contractor is responsible to ensure that these surface drainage and moisture control recommendations are followed throughout the life of the structure.

10.0 PAVEMENT DESIGN RECOMMENDATIONS

Design of the parking lot pavement section is based on the procedures outlined in the 1993 Guidelines for Design of Pavement Structures by the American Association of State Highway and Transportation Officials (AASHTO). For traffic loading we assumed a traffic index of 5.5, which is standard for parking lots accommodating light traffic. A traffic index of 7.0 was used for areas with heavy traffic. Any asphalt removed during construction of the proposed bank along West 100 south Street or Main Street (State Highway 89) should be replaced to match the existing pavement thickness. A CBR value of 10 was used based on the soil encountered in our investigation.

For pavement design, the following design parameters have been assumed:

- < Pavement Design Life - 20 years
- < Structural Layer Coefficients
 - Asphalt = 0.42
 - Type II = 0.12

Based on design parameters, the following pavement sections are provided for the portions of the parking lot with minimal and heavy truck traffic.

Location	Asphalt Thickness (inches)	Base Course (in.)	Scarified and Compacted Subgrade (in)
Light Traffic Area (T.I = 5.5)	2.5	8.0	8.0
Heavy Traffic Area (T.I = 7.0)	3.0	10.0	8.0

Recompacted on-site soils should be compacted to a minimum of 95% of the maximum dry density as determined by ASTM D-1557 and base course soils should be compacted to a minimum of 95% of the maximum dry density (ASTM D-1557). Asphalt should be compacted to at least 96% of the Marshall maximum density. Asphaltic concrete and base should be approved prior to site delivery and tested during placement for conformance with project specifications.

11.0 SOIL CORROSIVITY

One soluble sulfate content test was conducted on one sample collected at 2 feet bgs in test pit TP-1. The sample collected had a soluble sulfate content of 0.29 percent by mass, which is considered corrosive. Therefore, we recommend that all concrete in contact with or within 6 inches of native soils be designed in accordance with ACI 318, section 19.3 for exposure category S2. This includes 4,500 psi concrete, type V cement, and a maximum water cement ratio of 0.45. Buried pipes should be plastic (PVC or HDPE) instead of metal, where possible.

12.0 FOUNDATION REVIEW AND TESTING

This report has been prepared to assist in project design and construction. Variations from the conditions portrayed in the exploratory investigations may occur which are sometimes sufficient to require modifications to the design. In order to incorporate recommendations provided into actual field conditions and to confirm that the project specifications are implemented, we recommend that observation and testing be performed during construction to monitor over-excavation, grading, and preparation of soils upon which foundations elements or structural loads may be established.

13.0 LIMITATIONS

The exploratory data presented in this report were collected to provide geotechnical design recommendations for this project and subsurface site descriptions represent conditions observed at the time and at the locations explored. The investigation may not be indicative of subsurface conditions beyond the investigation locations and conditions may change with passage of time. If subsurface conditions are encountered that are significantly different than those reported herein, Landmark should be contacted immediately for the continued applicability of the recommendations. In the event changes to the project are made that differ from those presented in this report, Landmark should be made aware of the changes. Landmark will provide written verification that the recommendations and conclusions remain valid or that modifications are required.

This report has been prepared to assist in project design and construction. We respectfully request the opportunity to review the final design drawings and specifications in order to determine whether the assumptions and recommendations presented herein are applicable to the anticipated designs.

This report is not intended to be used as a bid document. Any information concerning the environmental conditions of the site is beyond the scope of this geotechnical study. This geotechnical report has been prepared to meet the specific needs of our client and may not be appropriate to satisfy the needs of other users.

Site conditions and standards of practice change, therefore, we should be notified to review and update the report and its recommendations if construction is not commenced within 3 years of the date it was issued.

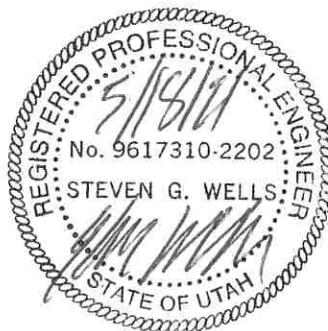
LANDMARK TESTING & ENGINEERING

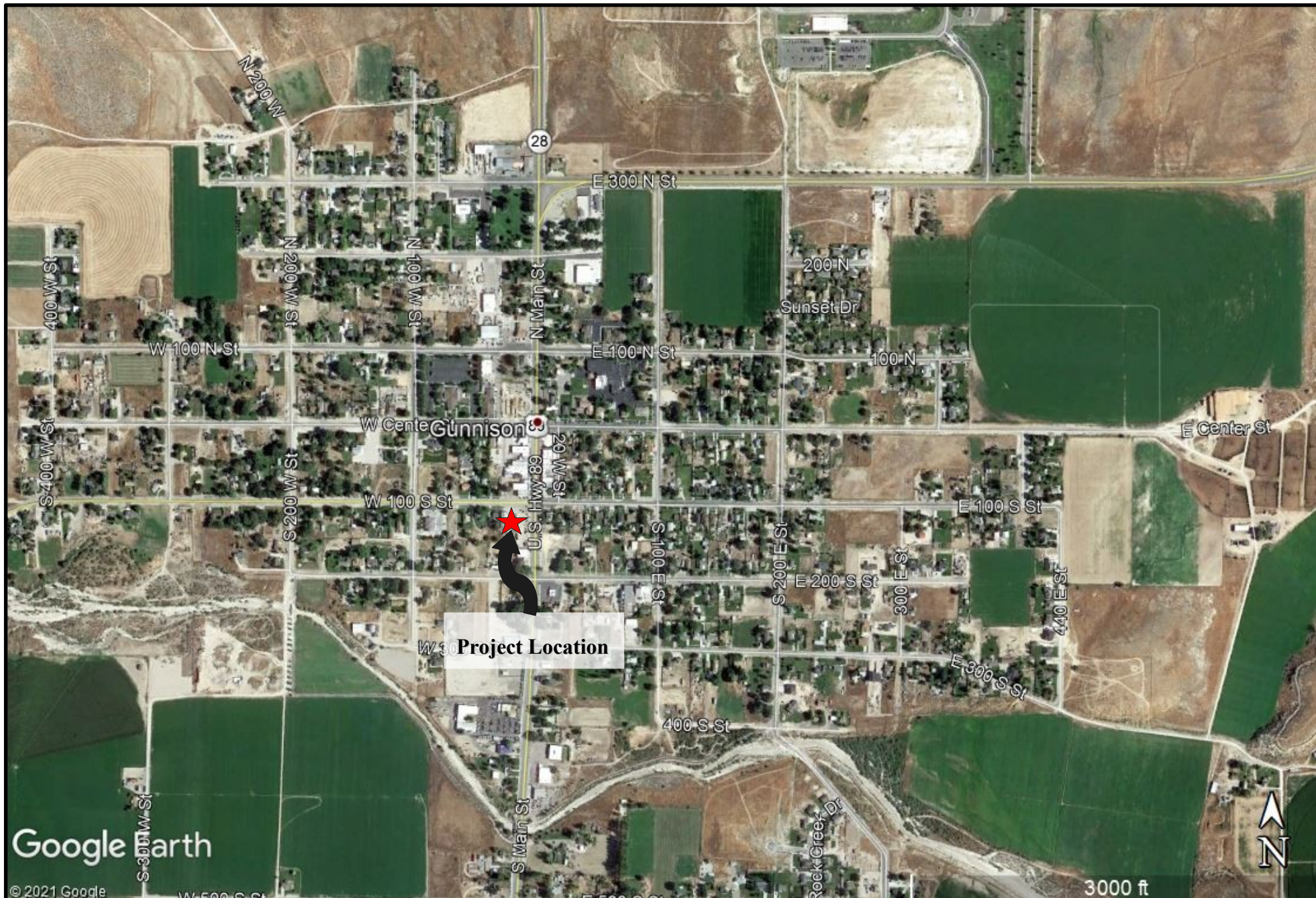


Chad Coffey, E.I.T
Staff Engineer

Reviewed by:

Steven Wells, P.E.
Geotechnical Engineer





Vicinity Map
Landmark Project No 21361

Figure 1



TEST PIT NUMBER TP-1

DATE STARTED 4/22/21 **COMPLETED** 4/22/21 **EXCAVATION COMPANY** Lynn Pickets **ELEVATION** _____
LOGGED BY Chad Coffey **CHECKED BY** Steve Wells **EXCAVATION METHOD** Case 580
NOTES _____ **AT TIME OF EXCAVATION** ---

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		MECHANICAL GRADATION			Other Tests
						LIQUID LIMIT	PLASTICITY INDEX	GRAVEL (%)	SAND (%)	FINES (%)	
0											
			FILL: SILTY SAND WITH GRAVEL (SM), medium dense, moist, fine to coarse-grained, gravel up to 1-inch, dark gray.								
			SILTY SAND (SM), medium dense, moist, trace gravel, yellowish brown.								
5			SILTY SAND WITH GRAVEL (SM), dense, moist, coarse-grained, gravel up to 3 inches, trace cobbles up to 6 inches, reddish brown.		8.1			39	45	17	
10											

Bottom of test pit at 10.0 feet.

TEST PIT NUMBER TP-2

DATE STARTED 4/22/21 **COMPLETED** 4/22/21 **EXCAVATION COMPANY** Lynn Pickets **ELEVATION** _____
LOGGED BY Chad Coffey **CHECKED BY** Steve Wells **EXCAVATION METHOD** Case 580
NOTES _____ **AT TIME OF EXCAVATION** ---

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		MECHANICAL GRADATION			Other Tests
						LIQUID LIMIT	PLASTICITY INDEX	GRAVEL (%)	SAND (%)	FINES (%)	
0											
			FILL: SILTY SAND WITH GRAVEL (SM), medium dense, moist, fine to coarse-grained, gravel up to 1-inch, concrete and rebar debris, dark gray.		10.1			23	43	34	Soluble Sulfate = 0.29%
			Footing from previous structure.								
			SILTY SAND (SM), medium dense, moist, trace gravel, yellowish brown.								
5			SILTY SAND WITH GRAVEL (SM), dense, moist, coarse-grained, gravel up to 3 inches, trace cobbles up to 6 inches, reddish brown.								
10											

Bottom of test pit at 10.0 feet.



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PROJECT NAME State Bank of Southern Utah - Gunnison
CLIENT Jones & Demille Engineering
PROJECT NUMBER 21361
PROJECT LOCATION Gunnison, Utah

Figure No. 3

LANDMARK 2 TEST PITS - LANDMARK NEW.GDT - 5/17/21 13:42 - P:\PROJECTS\21361\GEO\TECH\STATE BANK OF S. UTAH GUNNISON.GPJ

TEST PIT NUMBER TP-3

DATE STARTED 4/22/21 **COMPLETED** 4/22/21 **EXCAVATION COMPANY** Lynn Pickets **ELEVATION** _____
LOGGED BY Chad Coffey **CHECKED BY** Steve Wells **EXCAVATION METHOD** Case 580
NOTES _____ **AT TIME OF EXCAVATION** ---

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		MECHANICAL GRADATION			Other Tests
						LIQUID LIMIT	PLASTICITY INDEX	GRAVEL (%)	SAND (%)	FINES (%)	
0											
			FILL: SILTY SAND WITH GRAVEL (SM), medium dense, moist, fine to coarse-grained, gravel up to 1-inch, asphalt debris, dark gray.								
5			SILTY SAND (SM), medium dense, moist, trace gravel, yellowish brown.		12.8			11	47	42	
			SILTY SAND WITH GRAVEL (SM), dense, moist, coarse-grained, gravel up to 3 inches, trace cobbles up to 6 inches, reddish brown.								
10											

Bottom of test pit at 10.0 feet.

TEST PIT NUMBER TP-4

DATE STARTED 4/22/21 **COMPLETED** 4/22/21 **EXCAVATION COMPANY** Lynn Pickets **ELEVATION** _____
LOGGED BY Chad Coffey **CHECKED BY** Steve Wells **EXCAVATION METHOD** Case 580
NOTES _____ **AT TIME OF EXCAVATION** ---

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		MECHANICAL GRADATION			Other Tests
						LIQUID LIMIT	PLASTICITY INDEX	GRAVEL (%)	SAND (%)	FINES (%)	
0											
			FILL: SILTY SAND WITH GRAVEL (SM), medium dense, moist, fine to coarse-grained, gravel up to 1-inch, asphalt debris, dark gray.								
5			SILTY SAND (SM), medium dense, moist, trace gravel, yellowish brown.								
			SILTY SAND WITH GRAVEL (SM), dense, moist, coarse-grained, gravel up to 3 inches, trace cobbles up to 6 inches, reddish brown.								
10											

Bottom of test pit at 10.0 feet.



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PROJECT NAME State Bank of Southern Utah - Gunnison
CLIENT Jones & Demille Engineering
PROJECT NUMBER 21361
PROJECT LOCATION Gunnison, Utah

Figure No. 4

TEST PIT NUMBER TP-5

DATE STARTED 4/22/21 COMPLETED 4/22/21 EXCAVATION COMPANY Lynn Pickets ELEVATION _____

LOGGED BY Chad Coffey CHECKED BY Steve Wells EXCAVATION METHOD Case 580

NOTES _____ AT TIME OF EXCAVATION ---

DEPTH (ft)	GRAPHIC LOG	SAMPLE TYPE NUMBER	MATERIAL DESCRIPTION	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS		MECHANICAL GRADATION			Other Tests
						LIQUID LIMIT	PLASTICITY INDEX	GRAVEL (%)	SAND (%)	FINES (%)	
0											
			FILL: SILTY SAND WITH GRAVEL (SM), medium dense, moist, fine to coarse-grained, gravel up to 1-inch, dark gray.								
			SILTY SAND (SM), medium dense, moist, trace gravel, yellowish brown.								
5											
			SILTY SAND WITH GRAVEL (SM), dense, moist, coarse-grained, gravel up to 3 inches, trace cobbles up to 6 inches, reddish brown.								
10											

Bottom of test pit at 10.0 feet.

LANDMARK 2 TEST PITS - LANDMARK NEW.GDT - 5/17/21 13:42 - P:\PROJECTS\21 PROJECTS\21361\GEO\TECH\STATE BANK OF S. UTAH GUNNISON.GPJ



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PROJECT NAME State Bank of Southern Utah - Gunnison

CLIENT Jones & Demille Engineering

PROJECT NUMBER 21361

PROJECT LOCATION Gunnison, Utah

Figure No. 5

UNIFIED SOIL CLASSIFICATION SYSTEM

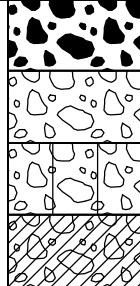
MAJOR DIVISIONS

SYMBOLS

TYPICAL NAMES

COARSE-GRAINED SOILS (More than 50% of soil Retained on No. 200 sieve size)

GRAVELS More than 1/2 of coarse fraction > No. 4 sieve size



GW

Well graded gravels or gravel-sand mixtures little or no fines.

GP

Poorly graded gravels or gravel-sand mixtures little or no fines.

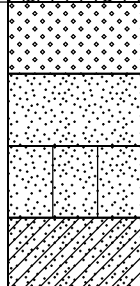
GM

Silty gravels, gravel-sand-silt mixtures

GC

Clayey gravels, gravel-sand-clay mixtures

SANDS More than 1/2 of coarse fraction < No. 4 sieve size



SW

Well graded sands or gravelly sand mixtures little or no fines.

SP

Poorly graded sands or gravelly sand mixtures little or no fines.

SM

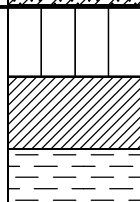
Silty sands, sand-silt mixtures

SC

Clayey sands, sand-clay mixtures

FINE-GRAINED SOILS (Less than 50% of soil Retained on No. 200 sieve size)

SILTS & CLAYS Liquid Limit < 50



ML

Inorganic silts and very fine sands, rock flour, silty fine sands or clayey silts with slight plasticity

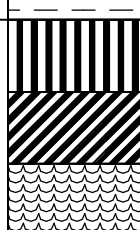
CL

Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.

OL

Organic silts and organic silty clays of low plasticity

SILTS & CLAYS Liquid Limit > 50



MH

Inorganic silts, micaceous or diatomaceous fine sand or silty soils, elastic silts

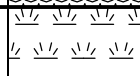
CH

Inorganic clays of high plasticity, fat clays

OH

Organic clays of medium to high plasticity, organic silty clays, organic silts

HIGHLY ORGANIC SOILS



PT

Peat and other highly organic soils

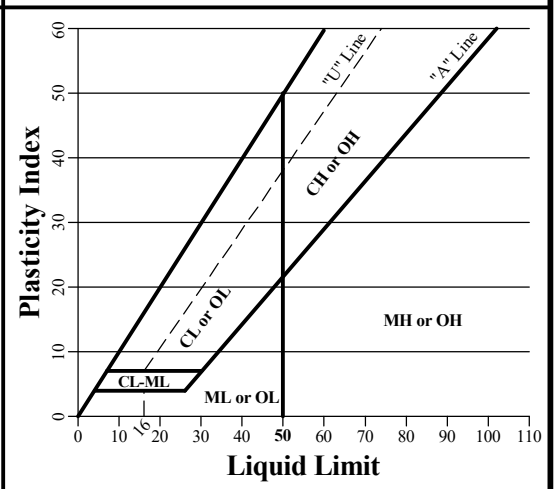
GRAIN SIZE CHART

CLASSIFICATION	Range of Grain Size	
	U.S. Standard Sieve Size	Grain Size in Millimeters
BOULDERS	Above 12"	Above 305
COBBLES	12" to 3"	305 to 76.2
GRAVEL		
Coarse	3" to 3/4"	76.2 to 19.1
Fine	3/4" to No. 4	19.1 to 4.76
SAND		
Coarse	No. 4 to No. 10	4.76 to 2.00
Medium	No. 10 to No. 40	2.00 to 0.42
Fine	No. 40 to No. 200	0.420 to 0.074
SILT & CLAY	Below No. 200	Below 0.074

SAMPLES

	Relatively Undisturbed Sample
	Block Sample
	Bag Sample
	Auger Cuttings
	Bucket Sample
	Core
	No Recovery

PLASTICITY CURVE



Landmark Testing and Engineering
795 Factory Drive
84790
Telephone: 435-986-0566
Fax: 435-986-0568

PROJECT NAME State Bank of Southern Utah - Gunnison

CLIENT Jones & Demille Engineering

PROJECT NUMBER 21361

PROJECT LOCATION Gunnison, Utah

Figure No. 6

SECTION 02 32 19
EXPLORATORY EXCAVATIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating to locate existing utilities.
 - 2. Coordinating location of existing utilities with new utilities.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 31 23 16.13 – Trenching.

1.2 DEFINITIONS

- A. Exploratory Excavation: Excavation by conventional backhoe or trackhoe to locate existing utilities.
- B. Trenchless Exploratory Excavation: Excavation by vacuum using high velocity air stream to remove materials or other acceptable method to locate existing utilities. Use method that produces no more than one to two foot square area of disturbance and as deep as necessary to expose buried utility.

1.3 SUBMITTALS

- A. Submit description of method and equipment to be used for trenchless exploratory excavation.

1.4 EXISTING CONDITIONS

- A. Verify field location of existing utilities and coordinate with location of new utilities prior to installation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Bedding: Use bedding material as indicated below, unless utility company requires otherwise.
 - 1. Excavated material consisting of loam, sandy clay, sand, or gravel which is free from clods and rocks larger than 3/8 inch, frozen material, organic material, and debris.
 - 2. If excavated material is unsuitable for bedding, import bedding consisting of loam, sandy clay, sand, or gravel which is free from

clods and rocks larger than 3/8 inch, frozen material, organic material, and debris.

- B. Backfill: Use excavated material, imported material or flowable fill as follows:
 - 1. Excavated Material: Material originating from trench which are free from rubbish, debris, organic material, frozen material, or other objectionable material.
 - a. May include rocks originating from trench and not exceeding 4 inches.
 - b. May include broken concrete and asphalt pavement originating from trench and not exceeding 4 inches.
 - 2. Imported Material: Imported soil with 4 inch maximum gradation and free from frozen material, organic material, debris, and other objectionable material.
- C. Tracer Wire and Locator Tape: Match existing materials or provide approved equal materials. Provide water tight connectors where necessary.
- D. Warning Tape: Match existing materials or provide approved equal materials.

PART 3 EXECUTION

3.1 PREPARATION

- A. Identify location of new utility lines.
- B. Protect plant life, lawns, fences, existing structures, sidewalks, paving, curbs, and other features remaining.
- C. Protect bench marks and control points.
- D. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- E. When working on shoulders or within roadway, place barricades, warning signs, and flag persons as needed to protect public and Work in accordance with Section 01 50 00.

3.2 EXCAVATION

- A. At locations where horizontal directional drilling is used to install new utilities, use trenchless excavation methods to determine horizontal and vertical location of existing utilities.

- B. At other locations, use conventional, trenchless, or other acceptable methods to determine horizontal and vertical location of existing utilities.
- C. Use existing utility location information to determine best suitable location for new utilities. If there are conflicts with existing and new utility locations, notify Engineer.

3.3 BEDDING

- A. Place bedding at sides and over top of exposed utility line. Place bedding in layers not exceeding 6 inches compacted depth. Place bedding to total depth of 12 inches surrounding utility line.
- B. Compact bedding to 96 percent of maximum laboratory density.
- C. Maintain moisture content of bedding within plus or minus 2 percent of optimum.

3.4 BACKFILL

- A. When using excavated or imported materials, backfill trenches in accordance with Section 31 23 16.13.
- B. Grade surplus material to blend in with existing contours or remove surplus materials from site.
- C. Restore surface improvements to equal or better condition as existed prior to construction.
- D. Make roadway repairs or construct temporary gravel surface immediately after backfill is placed. Maintain temporary gravel surface until final surface is placed.

3.5 PROTECTION

- A. Protect existing utilities from damage or displacement. Repair or replace if damaged.
- B. Protect locating service wires, such as tracer wire. Repair or replace if damaged.
- C. Replace damaged or removed warning tape. If 3 feet or more of warning tape is damaged or removed, install new warning tape in excavated area.

END OF SECTION

**SECTION 02 4116
SITE AND BUILDING DEMOLITION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Selective demolition of built site elements.
- C. Abandonment and removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

- A. **RIGHTS TO SALVAGE:** This contractor shall notify Owner a minimum of fourteen (14) days prior to start of demolition so that items of salvage to the Owner may be accomplished.
 - 1. The Owner reserves the right to salvage and/or remove any items from the existing building prior to the start of demolition.
 - 2. After the start of demolition all steel, iron, steel sash, etc., except as otherwise noted, shall become the property of the demolition contractor.
 - 3. Do not begin removal until receipt of notification to proceed from Owner.
- B. Section 01 1100 - Summary of Work: Limitations on Contractor's use of site and premises.
- C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- D. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.
- E. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.
- F. Section 31 2200 - Grading: Site Clearing and Topsoil removal.
- G. Section 31 2200 - Grading: Fill material for filling holes, pits, and excavations generated as a result of removal operations.
- H. Section 31 2323 - Fill: Fill material for filling holes, pits, and excavations generated as a result of removal operations.

1.03 REFERENCE STANDARDS

- A. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.
- B. NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations; 2013.

1.04 SUBMITTALS

- A. Provide documentation of fill materials showing compliance with requirements of Section 02 3200 - Geotechnical Investigation. Follow requirements of Section 01 33 00 - Submittals.

PART 3 EXECUTION

2.01 SCOPE

- A. Shall include all labor, equipment tools, etc., required to complete all demolition, salvage, and removal work required to accommodate all building improvements and/or site improvements as shown on the drawings or specified herein.
- B. Refer to Drawings for extent of Work.
- C. The Subcontractor shall be responsible to provide continuous fugitive dust control measures within the limits of the construction site, related sites and adjacent streets and roads. Dust control shall be provided for, but not be specifically limited to, the stabilization of unpaved roads, parking lots, haul roads, access roads, spoil sites, excavations, embankments, stockpiles, and all other areas which become potential sources of dust as a result of

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construction activities. Contractor's dust control measure shall maintain compliance with the General Utah Air Pollution Regulations, R307.309 - "Nonattainment and maintenance areas for PM10 and PM2.5: Fugitive emissions and fugitive dust." Obtain all required permits and file notices to the Utah State Air Quality Control Board.

1. Wetting of surfaces and structures with water as appropriate.
 2. Minimizing surface disturbances.
 3. Cover loads of materials, debris and waste materials taken from the construction site as needed to suppress dust during transit.
 4. All mud and dirt shall be removed from vehicles prior to entering a paved or traveled area or road. Any mud or dirt that is carried out onto paved or graveled surfaces shall be removed immediately and no less than daily.
- D. Remove other items indicated, for salvage, relocation, and recycling.
- E. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.
- F. Work not included:
1. All sod stripping, site demolition, earth excavation, trenching, backfill, etc., Refer to Section 31 22 20, "Site Excavation and Backfill" and Civil drawings.
 2. Capping of gas, water, etc., lines as indicated on the drawings; Refer to Divisions 22 – 23; Mechanical and Divisions 26 – 27; Electrical.

2.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with other requirements specified in Section 01 7000.
- B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
1. Obtain required permits.
 2. Comply with applicable requirements of NFPA 241.
 3. Use of explosives is not permitted.
 4. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 5. Provide, erect, and maintain temporary barriers and security devices.
 6. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 7. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 8. Do not close or obstruct roadways or sidewalks without permit.
 9. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 10. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
 11. Coordinate exiting plans with Washington County School District and authority having jurisdiction.
- C. Do not begin removal until receipt of notification to proceed from Owner.
- D. Do not begin removal until built elements to be salvaged or relocated have been removed.
- E. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.
- F. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
 - a. Shoring must be designed by a Structural Engineer and drawing submitted to the Architect for review before this work is commenced.
 2. Prevent movement or settlement of adjacent structures.

3. Stop work immediately if adjacent structures appear to be in danger.
 4. Protect areas of existing building, which are to remain from damage due to dust or falling debris.
 5. Responsibility for Repair: All damage resulting from the execution of this section shall be suitably repaired by the demolition contractor as directed by the Architect.
 6. Barricades and Fences: All fences, barricades, bridges, temporary enclosures of building not being demolished, flagmen, warning lights, etc., necessary for the protection of life and property will be provided by the general contractor as set forth in Division 1, bound with this specification.
 7. Active Utility Lines: Verify that all electric lines in the demolition area have been made inactive. Verify that all water and steam lines have been capped. Verify that sanitary and storm sewers have been plugged prior to the beginning of demolition.
- G. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.
- H. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.
- I. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

2.03 EXISTING UTILITIES

- A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.
- H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

2.04 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site in the demolition contractor's trucks. No burning or burying of this type of debris will be allowed. Drayage of these materials is considered a part of this contract.
- B. Remove from site all materials not to be reused on site; do not burn or bury.
- C. Leave site in clean condition, ready for subsequent work.
- D. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

**SECTION 03 1000
CONCRETE FORMWORK AND ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, tools and services required to fully complete all Concrete Forming work as required by the Drawings and/or specified herein including, but not limited to, the following described items.
- C. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- D. Openings for other work.
- E. Form accessories.
- F. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Cast-in-Place Concrete and Masonry Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 04 2000 - Unit Masonry: Reinforcement for masonry.
- D. Section 04 2001 - MASONRY VENEER: Spacing for veneer anchor reglets recessed in concrete.
- E. Section 05 1000 - Structural Steel: Placement of embedded steel anchors and plates in cast-in-place concrete.
- F. Section 05 2000 - Steel Joists, Girders and Deck: Placement of embedded steel anchors, plates and joist seats in cast-in-place concrete.
- G. Section 31 2200 - Building Pad Preparation
- H. Section 31 2210 - Building Excavation and Backfill
- I. Section 31 2220 - Site Excavation and Backfill

1.03 REFERENCE STANDARDS

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).
- B. ACI 301 - Specifications for Structural Concrete 2016.
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- D. ACI 347R - Guide to Formwork for Concrete 2014, with Errata (2017).
- E. ASME A17.1 - Safety Code for Elevators and Escalators 2016.
- F. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2015, with Editorial Revision (2016).
- G. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus 2013.
- H. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2017a.
- I. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2017.
- J. PS 1 - Structural Plywood 2009.

1.04 SUBMITTALS

- A. Product Data: Provide data on void form materials and installation requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Protect plastic foam products from damage and exposure to sunlight.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct concrete that complies with design with respect to shape, lines, and dimensions.
- C. Comply with applicable state and local codes with respect to design, fabrication, erection, and removal of formwork.
- D. All footings, walls, columns, piers, slabs, walks and site concrete shall be formed using materials as specified herein.
- E. All forms shall conform to the shape, lines and dimensions of the members as called for on the drawings, and shall be substantially and sufficiently tight to prevent leakage of concrete. They shall be properly braced or tied together so as to maintain position and shape.
- F. Temporary Openings: Provide openings in formwork as required or directed.
- G. Screeds for Slabs: Accurately slot and maintain to required grade or elevation prior to placing concrete.
- H. Provide top form for inclined surfaces steeper than 1.5 horizontal to one (1) vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.

2.02 WOOD FORM MATERIALS

- A. Lumber for Formwork: "Standard Grading and Dressing Rules No. 15 of West Coast Lumber Inspection Bureau for Douglas Fir 'Standard and Better' Grade S4S."
- B. Plywood for Formwork: "Product Standard PS1 74 for Douglas Fir Plywood," "Plyform" exterior grade.
- C. Forms for Exposed Architectural Finish Concrete: Plyform or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings.
 - 1. Use MDO-plyform complying with U.S. Product Standard PS-1 "B-B Medium Density Overlaid Concrete Form," Class I or better.
 - 2. Use Ties at 24" o.c. or 16" o.c. each way, as shown on elevations. Provide sample to Architect for review.
 - 3. At round columns, use "Sonotube" or re-useable prefabricated steel forming as required.

2.03 REMOVABLE PREFABRICATED FORMS

- A. Manufacturers:
 - 1. Dayton Superior: www.daytonconcreteacc.com
 - 2. Symons: www.symons.com
 - 3. Advance Concrete Form, Inc.: www.advanceconcreteform.com
 - 4. EFCO Corporation: www.efco-usa.com
 - 5. Western Forms: www.westernforms.com
 - 6. Substitutions: See Section 00 4325 - Product Substitutions.
- B. Preformed Steel Forms: Minimum 16 gage, 0.0598 inch (1.52 mm) thick, matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
 - 1. Do not use rust-stained steel form-facing material.

2.04 FORMWORK ACCESSORIES

- A. Form Ties for Architectural Concrete: Factory-fabricated Coil Ties. Provide two (2) or four (4) strut units as required by design load. Install in accordance with the tie pattern shown on

elevations. Install grey plastic setback plugs where exposed to view, or weather. Coil Ties shall have a mill galvanized finish.

1. Products: Subject to compliance with requirements, provide one of the following.
 - a. Burke Concrete
Ph: (703) 686-2500
www.burkeconcrete.com
 - b. Richmond Tycrus (by Dayton Superior)
Ph: (888) 977-9600
www.daytonsuperior.com
 - c. Sure-Grip (by Dayton Superior)
Ph: (888) 977-9600
www.daytonsuperior.com
- B. Form ties for unexposed concrete: 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" to the plane of the exposed concrete surface.
 2. Furnish ties that, when removed, will leave holes not larger than 1" in diameter in concrete surface.
- C. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
- D. Chamfer Strips, and Rustication Joints: Poly-Comp Plastic, of Profile shown on drawings.
- E. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 1000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

- A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 1. Class A, 1/8" for Architectural (Exposed) Concrete.
 2. Class C, 1/2" for unexposed concrete.
- D. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- E. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- F. Align joints and make watertight. Keep form joints to a minimum.
- G. 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.
- H. Chamfer exterior corners and edges of permanently exposed concrete.

- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Obtain approval before framing openings in structural members that are not indicated on drawings.
- K. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.
- L. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- M. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.
- N. Insets, Anchors: Comply with ACI-318 "Building Code Requirements for Reinforced Concrete," for embedded conduits and piping, except as modified by the drawings. Carefully check all other trades before completing forms and placing concrete to determine that all embedded items are in place. Set all miscellaneous anchors, bolts, ties, dowels, plates, etc. Cooperate completely with other trades in the proper setting aligning and securing of all items built into and dependent on the concrete work.
- O. Install void forms in accordance with manufacturer's recommendations. Protect forms from moisture or crushing.
- P. Coordinate this section with other sections of work that require attachment of components to formwork.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.

3.07 REMOVING AND REUSING FORMS

- A. 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 fifty degrees (50°F) for twenty-four (24) hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained.
- B. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- C. Leave formwork, for beam soffits, and other structural elements, that support weight of concrete in place until concrete has achieved the following:
- D. At least seventy percent (70%) of twenty-eight (28) day design compressive strength.
- E. Determine compressive strength of in-place concrete by testing representative field or laboratory-cured test specimens according to ACI 301.
- F. Remove forms only if shoes have been arranged to permit removal of forms without loosening or disturbing shores.

- G. 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.
- H. 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.
- I. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- J. Store removed forms to prevent damage to form materials or to fresh concrete. Discard damaged forms.

END OF SECTION

**SECTION 03 2000
CAST-IN-PLACE CONCRETE AND MASONRY REINFORCING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to Work of this Section.
- B. Reinforcing steel for cast-in-place concrete and masonry as indicated and specified, complete.
- C. Furnish all labor, materials, equipment, tools and services required to fully complete all reinforcing work as required by the Drawings and/or specified herein including, but not limited to, the following described items. Refer to Structural Drawings for notes on required reinforcing laps.
- D. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Formwork and Accessories.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 04 2000 - Unit Masonry: Reinforcement for masonry.
- D. Section 04 2001 - MASONRY VENEER: Spacing for veneer anchor reglets recessed in concrete.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete 2016.
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- C. ACI SP-66 - ACI Detailing Manual 2004.
- D. ASTM A184/A184M - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement 2019.
- E. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2018, with Editorial Revision (2018).
- F. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.
- G. ASTM A704/A704M - Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement 2017.
- H. ASTM A706/A706M - Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement 2016.
- I. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement 2016.
- J. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete 2018a.
- K. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel 2011.
- L. CRSI (DA4) - Manual of Standard Practice 2009.
- M. CRSI (P1) - Placing Reinforcing Bars 2011.

1.04 SUBMITTALS

- A. See Section 01 3300 - Submittals, for submittal procedures.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel
 - 1. All reinforcing bars for concrete tilt-up panels shall be ASTM A706 Grade 60 ($F_y = 60$ ksi) or shall be ASTM A615 Grade 60 ($F_y = 60$ ksi) with mill certificates that indicate the following properties:
 - a. The actual yield strength does not exceed F_y by more than 18,000 psi
 - b. The ratio of actual tensile strength (F_u) to the actual yield strength (F_y) is 1.25 or greater.
 - c. Minimum elongation in 8 inches shall be at least:
 - 1) 14% for bar sizes #3 to #6
 - 2) 12% for bar sizes #7 to #11
 - 3) 10% for bar sizes #14 and #18
 - 2. All other reinforcing steel: ASTM A615/A615M, Grade 60 (60,000 psi) (420 MPa).
- B. Break-out bars shall be grade forty (40) with minimum yield strength of forty thousand (40,000) psi.
- C. Reinforcing shall not be welded.
- D. All floor slabs on grade shall be reinforced with #3 rebar at 1'-6" on center each way.
- E. Reinforcement Accessories:
 - 1. Tie Wire: Annealed, minimum 16 gage, 0.0508 inch (1.29 mm).
 - 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Comply with applicable code for concrete cover over reinforcement.
- E. All reinforcement steel bars, wire, and wire fabric shall be of the sizes or gauges and lengths and bent to the shapes as detailed on the drawings, and in accordance with sound engineering practice. All steel shall be thoroughly cleaned of mill scale, rust and all coatings that will destroy or reduce the bond. Steel shall be accurately positioned and so secured in place that it will not be displaced by the placing of concrete by using annealed wire.
- F. Wall and slab steel shall be wired together at all points where bars cross and shall be lapped at all splices as shown on the drawings. Splices shall be staggered so that adjacent splices will be at least 4' apart.
- G. All work shall be in accordance with the recommendations of the "Manual of Standard Practice for Detailing Reinforced Concrete Structures," ACI-315 and in accordance with all applicable codes and ordinances.
- H. All horizontal Steel shall be supported/installed as follows:
 - 1. Concrete Poured on Earth: Pre-cast blocks or supports of the proper size and spaced so as to keep the steel at the proper height.
 - 2. Concrete poured on horizontal forms and/or steel deck: Pre bent chairs spaced so as to keep the steel at a proper height within the slab.
 - 3. Lifting the reinforcement steel off of base or deck during placement of concrete will not be permitted.

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 4500 - Quality Control Services, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

**SECTION 03 3000
CAST-IN-PLACE CONCRETE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Provide all labor, materials, equipment, services, transportation, supervision, etc. to complete all building and site concrete work.
- C. This Section includes materials, mixing, proportioning, sampling testing, placing, finishing, and curing of all reinforced cast-in-place normal weight concrete indicated on the drawings or as specified herein.
- D. Fine grading and screeds for concrete slabs on earth. At locations shown on architectural and/or mechanical drawings, provide 6" high concrete housekeeping pads anchored to base slab per structural details where indicated for equipment.
 - 1. Install vapor barrier membrane between base course and slab-on-grade inside the building.
 - 2. Where floors are indicated to be recessed for ceramic or paver tile and also sloped to indicated drains - the concrete subfloor shall be sloped, no exceptions.
 - 3. Sloped and/or stepped floor slabs.
 - 4. Below grade floors and walls as shown on drawings.
 - 5. Above grade steps/risers.
- E. Concrete work, including floor slab footings, foundation walls, columns, piers, etc.
- F. All exterior curbs, sidewalks, etc.
- G. Sloping of concrete slabs for drainage pattern of floor to floor drains. (See Section 03 1000 - Concrete Formwork and Accessories).
- H. Installing anchors, bolts, slots, and other items to be cast into concrete; inserts for other trades carefully located by drawings or templates, or set by trade requiring them.
- I. Grout and dry pack.
- J. Setting of pipe sleeves for mechanical and electrical work sleeves to be furnished by these trades.
- K. Floor recesses for recessed floor finishes.
- L. Finishing and curing of concrete.
- M. Providing and placement of 1/2" asphalt impregnated expansion strips wherever required by drawings.
- N. Joint devices associated with concrete work.

1.02 RELATED REQUIREMENTS

- A. Section 01 4500 - Quality Control Services
- B. Section 03 1000 - Concrete Formwork and Accessories: Forms and accessories for formwork.
- C. Section 03 2000 - Cast-in-Place Concrete and Masonry Reinforcing.
- D. Section 07 1000 - Membrane Waterproofing
- E. Section 31 2200 - Building Pad Preparation
- F. Section 31 2210 - Building Excavation and Backfill
- G. Section 31 2220 - Site Excavation and Backfill
- H. Division 22 - Plumbing
- I. Division 23 - HVAC
- J. Division 26 - Electrical

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1.03 REFERENCE STANDARDS

- A. ACI 117 - Specifications for Tolerances for Concrete Construction and Materials 2010 (Reapproved 2015).
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete 1991 (Reapproved 2009).
- C. ACI 211.2 - Standard Practice for Selecting Proportions for Structural Lightweight Concrete 1998 (Reapproved 2004).
- D. ACI 214 - Guide to Evaluation of Strength Test Results of Concrete 2011.
- E. ACI 301 - Specifications for Structural Concrete 2016.
- F. ACI 302.1R - Guide to Concrete Floor and Slab Construction 2015.
- G. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete 2000 (Reapproved 2009).
- H. ACI 305R - Guide to Hot Weather Concreting 2010.
- I. ACI 306R - Guide to Cold Weather Concreting 2016.
- J. ACI 308R - Guide to External Curing of Concrete 2016.
- K. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- L. ACI 347R - Guide to Formwork for Concrete 2014.
- M. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2018, with Editorial Revision (2018).
- N. ASTM C1602/C1602M - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete 2012.
- O. ASTM C172/C172M - Standard Practice for Sampling Freshly Mixed Concrete 2014a.
- P. ASTM C231 / C231M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method 2014.
- Q. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2016, with Editorial Revision (2016).
- R. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens 2018.
- S. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete 2018.
- T. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens) 2016a.
- U. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2015a.
- V. ASTM C150/C150M - Standard Specification for Portland Cement 2018.
- W. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete 2016.
- X. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method 2016.
- Y. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).
- Z. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete 2017a.
- AA. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete 2017.
- BB. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete 2015.
- CC. ASTM C685/C685M - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing 2014.

- DD. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete 2015.
- EE. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types) 2018.
- FF. ASTM E1155 - Standard Test Method for Determining F(F) Floor Flatness and F(L) Floor Levelness Numbers 2014.
- GG. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs 2011 (Reapproved 2017).
- HH. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs 2017.
- II. COE CRD-C 48 - Method of Test for Water Permeability of Concrete 1992.
- JJ. COE CRD-C 572 - Corps of Engineers Specifications for Polyvinylchloride Waterstop 1974.

1.04 TESTING AND INSPECTION

- A. Materials and operations shall be tested and inspected as work progresses. Failure to detect defective work shall not prevent rejection when defect is discovered, nor shall it obligate the Architect for final acceptance.
 - 1. Test Results: The testing agency shall report test results in writing to Architect and Contractor within twenty-four (24) hours of test.
 - 2. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
 - 3. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.
 - 4. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect for each individual area.
- B. Concrete testing shall be under separate contract and paid for by Owner.
- C. To facilitate testing and inspection, this Contractor shall:
 - 1. Furnish necessary labor to assist testing agency in obtaining and handling samples at the jobsite. Take tests on site for slump and air-entrainment and when directed by the Architect.
 - 2. Advise the Owner and testing agency twenty-four (24) hours in advance of operations to allow for the assignment of testing personnel and testing.
 - 3. Provide and maintain for the use of the testing agency, adequate facilities for proper curing of concrete test specimens on the project site in accordance with ASTM C172/C172M.
 - 4. Testing done by others will be taken for each fifty (50) yards or days production.

1.05 SUBMITTALS

- A. See Section 01 3300 - Submittals
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Indicate proposed mix design complies with requirements of ACI 301, Section 4 - Concrete Mixtures.
 - 2. Indicate proposed mix design complies with requirements of ACI 318, Chapter 5 - Concrete Quality, Mixing and Placing.
- D. Samples for Pigment Color Selection: Submit manufacturer's complete sample chip set, including pigment number and required dosage rate for each color.
- E. Verification Samples: Submit sample chips of specified colors indicating pigment numbers and required dosage rates, for subsequent comparison to installed concrete.
- F. Test Reports: Submit report for each test or series of tests specified.

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- G. Submit floor plan showing locations of construction and control joints for Engineer/Owner review. (Note: On slabs to be used for casting beds for concrete tilt-up panels. Construction and control joints should be located so as to fall outside of panels or under architectural reveals or rustication strips.)
- H. Submit concrete mix design for each concrete class used.
- I. Submit separate mix designs if admixtures are required for the following:
 - 1. Hot and cold weather concrete work.
 - 2. Air entrained concrete work.
 - 3. Identify mix ingredients and proportions, including admixtures.
- J. Vapor retarder/barrier: Submit manufacturer sample and literature, including installation instructions for placement, seaming and pipe boot installation.

1.06 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.
- D. For slabs required to include moisture vapor reduction admixture (MVRA), do not proceed with placement unless manufacturer's representative is present for every day of placement.

1.07 WARRANTY

- A. See Section 01 7700 - Project Closeout
- B. This Contractor shall guarantee his work against pitting, spalling and other defects for a period of one (1) year from date of Substantial Completion. Guarantee shall be in form bound in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Comply with requirements of Section 03 1000.

2.02 REINFORCEMENT MATERIALS

- A. Comply with requirements of Section 03 2000.

2.03 CONCRETE MATERIALS

- A. Cement:
 - 1. For concrete except concrete over metal deck:
 - a. Portland cement complying with ASTM C150.
 - b. Use Type II - Moderate Sulfate Resistant or Type II-V blend with Class A through C concrete.
 - 2. Concrete shall also contain an approved Pozzolan acceptable to Geotechnical and/or Structural Engineer.
 - 3. Only one brand and manufacture of approved cement shall be used for exposed concrete.
- B. Fine and Coarse Aggregates: ASTM C33/C33M.
 - 1. local aggregates not complying with this standard may be used providing it can be shown by special test or a record of past performance these aggregates produce concrete of adequate strength and durability. Submit substantiating data to Architect as required.
 - a. Fine Aggregate clean, sharp, natural sand free from loam, clay, lumps or other deleterious substances, within allowable standards.
 - b. Coarse Aggregate: Clean, uncoated, graded aggregate containing no clay, mud, loam or foreign matter.
 - c. Gradation: Maximum size used in any particular location shall not exceed that as specified.
- C. Fly Ash: ASTM C618, Class F.
 - 1. Loss of ignition of 0.9% maximum

- D. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.

2.04 ADMIXTURES

- A. Provide admixtures produced and serviced by established, reputable manufacturers and used in compliance with manufacturer's recommendations.
- B. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- C. Air Entrainment Admixture: ASTM C260/C260M.
1. When requested, certification attesting to the percentage of effective solids and compliance with ASTM C260 shall be furnished.
 2. All exterior concrete flatwork, curbs and gutters, and catch basins shall have an air-entraining agent added which will yield entrainment as indicated in paragraph 2.4.C.
 3. Manufacturers:
 - a. BASF Chemical Company; Product - "MB-VR": www.basf-admixtures.com.
 - b. Euclid Chemical Company; Product - "Air Mix": www.euclidchemical.com.
 - c. Sika Corporation; Product - "Sika AER": www.usa.sika.com.
 - d. Grace Construction Products; Product - "Daravair M": www.graceconstruction.com.
 - e. Substitutions: See Section 00 4325 - Product Substitutions.
- D. Water Reducer (set controlling) Admixture
1. Concrete shall be adjusted to produce the required rate of hardening for varied climatic and job site conditions.
 - a. Water Reducing and Accelerating Admixture: ASTM C494/C494M Type E.
 - 1) Under forty (40) degrees F ambient temperature - accelerate (approval in writing required from the Architect)
 - b. Water Reducing and Retarding Admixture: ASTM C494/C494M Type D.
 - 1) Over eighty (80) degrees F ambient temperature - retard
 - c. Water Reducing Admixture: ASTM C494/C494M Type A.
 - 1) Between forty (40) degrees F and eighty (80) degrees - normal rate of hardening
 2. Admixture shall not reduce the amount of cement required. Amounts as accepted by Architect/Engineer. Do not use calcium chloride or admixtures that contain calcium chloride.
 3. Field Service, when requested, a qualified concrete technician, employed by the manufacturer, shall be available to assist in proportioning concrete materials for optimum use, to advise on proper use of the admixture and adjustment of concrete mix proportions to meet the jobsite and climatic conditions.
 4. All structural concrete.
 5. Manufacturers:
 - a. BASF Chemical Company, Product - "Pozzolith": www.basf-admixtures.com.
 - b. Euclid Chemical Company; Product - "Air Mix": www.euclidchemical.com.
 - c. Sika Corporation, Product - "Plastocrete": www.usa.sika.com.
 - d. Grace Construction Products; Product - "Daracel/Daracem": www.graceconstruction.com.
 - e. Substitutions: See Section 00 4325 - Product Substitutions.
- E. Color Conditioning Admixture (where required):
1. Manufacturers:
 - a. L.M. Scofield Co., Product - "Chromix": www.scofield.com
 - b. Davis Colors: www.daviscolors.com
 - c. Solomon Colors, Inc.: www.solomoncolors.com
 - d. Substitutions: See Section 00 43 25, "Product Substitutions".
 2. The Contractor shall assume a cost for colorant of sixty dollars (\$60.00) per yard.

2.05 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Sheet material complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs.

The use of single ply polyethylene is prohibited.

1. Installation: Comply with ASTM E1643.
2. Six (6) mil polyethylene vapor retarder with minimum six (6) inch lapped joints shall be used at interior floor slabs.
3. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
4. If contractor elects to use a laser screeding system - the vapor barrier shall be upgraded to a fifteen (15) mil minimum system that is rated as able to withstand being driven on.
5. Manufacturers:
 - a. Stego Industries, LLC; [____]: www.stegoindustries.com/#sle.
 - b. W. R. Meadows, Inc; PERMINATOR Class A - 15 mils (0.38 mm): www.wrmeadows.com/#sle.
 - c. Substitutions: See Section 01 6000 - Product Requirements.

2.06 BONDING AND JOINTING PRODUCTS

- A. Epoxy Bonding System:
 1. Complying with ASTM C881/C881M and of Type required for specific application.
 2. Manufacturers:
 - a. Adhesives Technology Corporation; Crackbond SLV-302, Crackbond LR-321, Crackbond LR-321 LPL, Ultrabond 2100 LPL, Ultrabond 2100, Ultrabond 1, Ultrabond 2, or Ultrabond HS200: www.atcepoxy.com/#sle.
 - b. Hit Re 500 by Hilti Corporation.
 - c. Acrylic 7 by Ramset/Redhead.
 - d. Substitutions: See Section 00 4325 - Product Substitutions.
- B. Slab Isolation Joint Filler: 1/2 inch (13 mm) thick, height equal to slab thickness, with removable top section that will form 1/2 inch (13 mm) deep sealant pocket after removal.
 1. Material: ASTM D1751, cellulose fiber.
 2. Manufacturers:
 - a. W. R. Meadows, Inc; Fiber Expansion Joint Filler with Snap-Cap: www.wrmeadows.com/#sle.

2.07 CONCRETE MIX DESIGN

- A. Selection of Proportions
 1. General: Concrete shall be composed of Portland Cement, fine aggregate, coarse aggregate, water, and as specified, an air-entraining admixture. Proportions of ingredients shall produce a mixture which will work readily into corners and angles of forms, bond to reinforcement, without segregation or excessive bleed water forming on the surface. Proportioning of materials shall be in accordance with ACI 211.1, "Recommended Practice for Selecting Proportions for Normal-Weight Concrete."
 - a. Proportions of ingredients shall be selected by past field experience or in lieu of past performance by laboratory trial mixes to produce placability, durability, strength and the additional properties specified.
 2. Required Average Strength Above Specified Strength: Determinations of required average strength above specified strength shall be in accordance with ACI 318 "Building Code Requirements for Reinforced Concrete" and evaluations of compressive strength results of field concrete shall be in accordance with ACI 214 "Guide to Evaluation of Strength Test Results of Concrete."
 - a. Past Field Experience: Proportions shall be established on the actual field experience of the ready-mix producer with the materials proposed to be employed. Standard deviation shall be determined by thirty (30) consecutive tests (or two groups of tests totaling thirty (30) or more.
 - 1) Average strength used for selecting proportions shall exceed specified strength (f'_c) by at least:
 - 550 psi - standard deviation is 300 to 400.
 - 700 psi - standard deviation is 400 to 500.
 - 900 psi - standard deviation is 500 to 600.

1200 psi - standard deviation is 15%.

- b. Trial mixes, when the ready-mix producer does not have a record of past performance, the combination of materials and the proportions selected shall be from trial mixes having proportions and consistencies suitable for the Work based on ACI 211.1, using at least three (3) different water-cement ratios which will produce a range of strengths encompassing those required.
 - 1) Average strength required shall be as listed above.
- B. Concrete Qualities Required (Refer also to structural drawings)
 - 1. Specified Compressive Strength - psi @ twenty-eight (28) days shall be as noted on the drawings.
 - 2. Concrete subject to exterior exposure shall be air-entrained conforming to ASTM C260/C260M. Total air content required (air-entrained and entrapped air) shall be:

Nominal Max. Size Coarse Aggregate: Total Air Content

3/4" or 1" 5% - 7%

1 1/2" 5% - 7%

- a. Air Content shall be measured by ASTM C231 / C231M "Test for Air Content of Freshly Mixed Concrete by Pressure Method."
- b. Maximum total air content on finished slabs, receiving a surface hardener shall be as listed above.
- 3. Concrete shall be proportioned and produced to have a slump, not to exceed:
 - a. Reinforced footings, walls - 4" maximum.
 - b. Interior slabs, other concrete - 4" maximum.
 - c. Exterior slabs - 4" maximum.
 - d. Slump shall be determined by ASTM C143/C143M, "Test for Slump of Portland Cement Concrete."
- 4. Concrete Mix Design shall be limited to 5.1 gallons of water per sack of cement for all exterior flatwork, curbs, curbs and gutters, exterior stairs, ramps, etc. Mix water shall include free moisture in aggregates. (.45 water/cement ratio.)

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
 - 1. Use epoxy bonding system for bonding to damp surfaces, for structural load-bearing applications, and where curing under humid conditions is required.
- B. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches (150 mm). Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
- C. Subgrade Preparation: Provide final check of finish grading before reinforcing is placed, and make any required adjustments. Provide ground surfaces at optimum moisture content, (as determined by Soils Engineer).

3.03 PRODUCTION OF CONCRETE

- A. Concrete shall be ready mixed batched, mixed, and transported in accordance with ASTM C94/C94M, "Specifications For Ready Mixed Concrete," unless a higher standard is called for.
 - 1. Plant equipment and facilities shall conform to the "Checklist For Certification of Ready Mixed Concrete Production Facilities" of the National Ready Mixed Concrete Association.
- B. A delivery ticket is required for each load of concrete and shall show the following information:

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1. Number of cubic yards.
 2. The exact amount of cement and fly ash (if allowed); this can be indicated either by weight or quantity.
 3. The amount of mixing water including free moisture in aggregates; this can be indicated either by weight or quantity.
 4. Amount of slump in inches.
 5. Type of cement.
 6. Amount of air entrainment when delivered at job site.
 7. Do aggregates meet ASTM specified - yes or no. Indicate maximum size aggregate.
 8. Amount and brand (or ASTM) of admixture other than air entraining agent (if any) previously accepted in writing by Architect.
- C. These tickets shall be given to the job superintendent or foreman and shall see that they are mailed to the Architect and testing contractor once a week. Note exact location of concrete on job.
- D. When required, concrete shall be color-conditioned with "Chromix" admixture as manufactured by L.M. Scofield Company. Color(s) as selected by the Architect.
1. Batching and Depositing Materials: The quantity of concrete being mixed in a mixer should not be less than one-third of the capacity of mixing drum (a minimum of three (3) yards in a nine (9) yard truck) and should always be in full yard increments. Before placing CHROMIX admixture in a mixer drum, the drum must be thoroughly cleaned and wetted and about forty (40) gallons of mix water and/or a portion of the aggregate added. After adding all dry ingredients, the truck hopper and all fins should be washed with at least ten (10) gallons of water and mixed for a minimum of fifteen (15) minutes. Concrete mix control must be such as to provide good batch-to-batch uniformity. Scofield's method of wet-checking the color of each load prior to being placed should be used. Scofield should be contacted for details of procedure. The slump of the concrete should be consistent throughout the project and no water should be added after a portion of the batch has been discharged. Concrete which has started to set should not be retempered, but must be discarded. It must be deposited near its final position to avoid segregation due to rehandling or flowing. When colored concrete is to be pumped, the priming slurry for the hose should be colored with CHROMIX admixture.

3.04 PLACING CONCRETE

- A. Preparation: Contractor shall provide access for delivery and provide sufficient equipment and manpower to rapidly place all concrete. Concrete shall be delivered and deposited within one (1) hour after adding water to mix. No additional water shall be added after initial batching without authorization by the Structural Engineer.
1. Place concrete in accordance with ACI 304R.
 2. Formwork shall have been completed; snow, ice, water, debris, removed from within forms.
 3. Expansion joint material, reinforcement, anchors and all embedded items shall have been positioned.
 4. Slabs on subgrades shall be sprinkled sufficiently to eliminate water loss from the concrete.
 5. Concrete shall not be placed on frozen ground.
- B. Conveying: Concrete shall be handled from mixer to final deposit rapidly by methods which will prevent segregation or loss of ingredients to maintain required quality of concrete.
- C. Depositing: Concrete shall be deposited continuously; when continuous placement is not possible, construction joints shall be located as approved by the Architect. Concrete shall be placed as nearly as possible to its final position, avoid rehandling or flowing. Deposit within one (1) hour after water is added to mix.
1. Concrete shall be consolidated by vibration spading, rodding, or forking. Work concrete around reinforcement, embedded items, and into corners, eliminate all air or stone pockets and other causes of honeycombing, pitting or planes of weakness.

2. Concrete shall be delivered to the point of placing so as not to fall vertically more than 4', and shall be deposited so that the surface is kept horizontal and level, a minimum amount being allowed to flow from one portion to another. Deposit concrete in forms as nearly as possible in its final location.
3. Internal vibration shall have a minimum frequency of eight thousand (8000) v/min. with amplitude to consolidate effectively.
 - a. Vibrators shall be operated by competent workmen.
 - b. Use of vibrators to transport concrete shall not be allowed. Do not vibrate forms, reinforcing, or create grout pools.
 - c. Vibrators shall be inserted and withdrawn approximately every 18" for five (5) to fifteen (15) sec.
 - d. Do not vibrate reinforcing or formwork as it will create grout pools.
- D. Depositing in Cold Weather: Temperature of concrete delivered at the jobsite shall conform to the following minimum:

Air Temperature	Concrete Temperature
30 to 45 deg. F.	55 to 90 deg. F.
0 to 30 deg. F.	60 to 90 deg. F.
Below 0 deg. F.	65 to 90 deg. F.

1. Water heated to above one hundred degrees (100°) F. shall be combined with the aggregates before cement is added. Cement shall not be added to water or aggregates having a temperature greater than one hundred degrees (100°) F.
 - a. All work shall be in accordance with ACI 306 "Recommended Practice for Cold Weather Concreting."
2. When the outdoor temperature is less than forty degrees (40°) F. temperature of the concrete shall be maintained at not less than fifty degrees (50°) F. for the required curing time.
 - a. Arrangements shall be made before placement to maintain required temperature without injury from excessive heat.
 - b. Combustion heaters shall not be used during the first forty-eight (48) hours without precautions to prevent exposure of concrete and workmen to exhaust gases containing carbon dioxide and carbon monoxide.
- E. Hot Weather: Temperature of concrete delivered at the jobsite shall not exceed ninety degrees (90°) F. Ingredients shall be cooled before mixing to prevent concrete temperature in excess of ninety degrees (90°) F.
 1. All work shall be in accordance with ACI305R77 "Recommended Practice For Hot Weather Concreting."
 2. Provisions shall be made for windbreaks, shading, fog spraying, sprinkling or wet cover when necessary.
 3. Use an evaporation retarder, finishing aid, "Confilm" Master Builders, or equal as approved by Structural Engineer.
- F. Place concrete for floor slabs in accordance with ACI 302.1R.
- G. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

- A. Locate joints as indicated on drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Contraction joints shall be as shown on the working drawings or per reviewed layout submitted by the Contractor and reviewed by Architect.
 1. Contraction joints may be tooled or sawed approximately equal to 1/4" the thickness of the members, maximum 1/4" radius and width within specified time frame as recommended

by the Portland Cement Association (PCA). (Note: Contractor to locate construction and control joints on slabs to be used as casting beds for concrete tilt-up panels so as to fall outside of the panels or under architectural reveal or rustication strips.)

- D. Construction or Expansion Joints: Shall be as shown on the drawings or per reviewed layout submitted by the Contractor.
- E. Expansion Joints: Premolded expansion joint filler shall conform to one of the following:
 - 1. ASTM D1751 "Standard Specifications For Preformed Expansion Joint Fillers For Concrete Paving And Structural Construction" (Non-extruding and resilient bituminous types.)

3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. Slabs: Of thickness shown and reinforced with #3 rebar at 18" on center (Unless noted otherwise, refer to structural drawings) each way at all floor slabs. Do not vibrate. Avoid excessive working which brings fines to surface. Do not dust with Portland Cement. Tolerance for surface finish shall be as follows:
 - 1. 1/8" in 12'-0" at vinyl composition tile locations.
 - 2. 1/8" in 10'-0" at hardwood floor locations.
 - 3. 1/4 " in 12'-0" elsewhere.
 - 4. Refer to architectural drawings for location.
- B. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.07 CONCRETE FINISHING

- A. Sample Panels: Furnished to Architect prior to any concrete finishing; indicate degree of smoothness, roughness, color, texture, or other criteria.
- B. Types
 - 1. Flatwork
 - a. Wood float.
 - b. Steel trowel.
 - c. Steel float.
 - d. Liquid hardener (where called for).
 - e. Broom finish exterior flatwork, curb, gutter and ramps.
 - 2. Surfaces against forms.
- C. Flatwork Finish
 - 1. Wood Float: Screed to indicated elevations, compact and bull-float to a smooth even surface. Final finishing shall be done with wood hand floats to give uniformly slightly roughened surface texture. Provide under tile setting beds.
 - 2. Steel Trowel: Screed interior slabs to elevations shown on drawings. No "dusting" on wet surface will be permitted. Level and compact with motor-driven trowel with flat-pitched blades. Final troweling shall be done with steel hand trowels after surfaces become hard enough to produce a hard, dense, smooth burnished finish. Provide for exposed interior concrete flatwork, except as otherwise indicated or specified.
 - 3. Steel Float: Same as steel trowel finish, except that final burnishing shall be omitted. Provide where resilient flooring is indicated or scheduled.
 - 4. Broom Finish: Same as steel float finish excepting slabs to receive a broomed texture. On handicapped ramps and exterior work provide heavily broomed finish - slightly diagonal to drain water.
 - a. All exterior concrete flatwork shall be broomed, medium texture.
 - b. At all curb cut locations provide non-slip tactile finish acceptable to the Architect; see site details.
 - c. Provide truncated dome surfaces at all accessible route ramps as shown on the drawings. Refer to Civil details for additional information.
 - 5. Liquid Floor Hardener: At all exposed, sealed interior slabs. Prepare surfaces, provide and apply liquid hardener treatment (Ashford Formula or approved equal). Refer to Section 03 35 00, "Special Concrete Finishes."

D. Finish Other Than Flatwork

1. Remove Projections and Offsets: Saturate all form ties, holes honeycombed areas, and damaged surfaces with water and fill voids with mortar of same mix as concrete. Color patching shall match adjoining surface. No other finishing operations are required for concrete concealed by plaster.
2. Paper Curing: Cover flat surfaces immediately after finish has hardened enough so that it will not be marred with Sisalkraft curing paper or approved equal 4 mil polyethylene curing and protecting covering. Lap not less than 3" and tape seal joints as recommended by manufacturer. Also lap edges 6" minimum.
3. Sprayed Membrane: May be used for both flat and vertical surfaces of concrete, except where paint, vinyl coverings, flooring, additional concrete, mortar setting beds, or other incompatible finish is to be subsequently applied. Apply with a power sprayer with nozzle equipped with wind guard. Apply in conformance with manufacturer's printed directions. Protect surfaces that have been membrane cured during entire curing period from all forms of abrasion.
4. Weather: If weather conditions are severe enough to unduly dry out concrete surface, the surface shall be kept moist with fine fog spray until protected by the above specified cure.
5. Stoned Finish: All exterior exposed vertical concrete shall be rubbed with carborundum stone to complete obliteration of all form marks, rough spots and other defects, the dressing process shall produce a final result of true plain and straight arises. Any grout that may be required in the remedy of wall defects is to be made from sand and cement mixed at approximately the same proportions as was used in the mix for the mass concrete which is to be repaired. Leave free of form marks and other defects.

E. Colored Concrete Finish: Match Architect's sample for color and texture. Cracks, voids, protrusions, spalls, or non-uniform color or texture will not be acceptable.

1. Exposed surfaces shall have uniform finish and texture. Provide sandblasting and texturing as scheduled in Architect's drawings.
2. Integrally colored concrete shall be cured in accordance with the colorant manufacturer's recommendations.

F. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:

3.08 CURING AND PROTECTION

A. All interior concrete slabs on grade:

1. Apply "Creto DPS" (manufactured by Creto International (702) 795-7325 or (855) 330-7325) within twenty four (24) hours of starting the pour, but, no sooner than when the concrete has set, the surface sheen has disappeared, and the concrete can be walked on without leaving any marks. Apply material using manufacturer approved coverage rates and equipment. To ensure saturation, check areas fifteen (15) to twenty (20) minutes after application as porosity will vary and some areas may appear to be drying faster. Go back and cover these areas using the same rate as the initial treatment.
2. Within 16-24 hours after initial application (noted in item #1 above), contractor shall thoroughly flush slabs with clean water to remove any alkali or contaminants pushed to the surface by the initial treatment. After allowing slab surfaces to dry, contractor shall then be required to test for the necessity of applying a second coat of "Creto DPS". This test is performed, in part, by taping down several pieces of ordinary, dry sponge or foam rubber to previously treated slabs. All other manufacturer recommended test procedures shall be followed. Leave test pieces in place for twenty four (24) hours. If, when test pieces are removed, the slabs, or the test pieces themselves, are wet; a second coat of the material shall be required. The architect and/or owner shall be present to observe test piece removal and shall render final judgment on necessity of second coat application. Additional applications and testing shall be required until satisfactory results are reached. The cost of testing and subsequent applications shall be included in the construction contract.

B. All exterior concrete (except concrete tilt-up panels) curing materials: apply non-residual sodium silicate curing compound to all fresh concrete surfaces after final troweling when surface glaze has disappeared. Using a low pressure sprayer, uniformly apply directly to the

concrete surfaces at the rate of two hundred (200) square feet per gallon for broom finished surfaces, or three hundred (300) square feet per gallon for steel troweled surfaces. Use one of the following:

1. L & M Cure (manufactured by L & M Construction Chemicals, telephone (800) 362-3331).
www.lmcc.com
 2. Day Chem Sil Cure (J-13) (manufactured by Dayton Superior), telephone (800) 745-3700.
www.daytonsuperior.com
 3. Eucosil (manufactured by Euclid Chemical Company), telephone (800) 321-7628.
www.euclidchemical.com
 4. U. S. Spec, Permasil, By U.S. MixCo Products, telephone (303) 778-7227.
www.usspec.com
- C. Immediately following placement, concrete shall be protected from premature drying, hot and cold temperatures, rain, flowing water and mechanical injury.
- D. Materials and method of curing shall be reviewed by the Architect. Curing shall continue for not less than seven (7) days. Apply curing method as soon as concrete will allow.
1. Application should be made immediately following the final concrete finishing operation as soon as the concrete is firm enough to work on. This will prevent temperature and hairline cracking.
 2. Application shall be made with a low pressure spray. All concrete surfaces shall be kept wet for 30-45 minutes.
 3. After this period, when the treated surfaces become slippery under foot, lightly sprinkle the surfaces with water to aid penetration.
 4. After the surface begins to dry once again, flush the entire surface with water to remove excess material, alkali, or impurities. Squeegee the surfaces completely dry.
 5. Coverage: Depends on the porosity of the concrete and ranges from approximately two hundred (200) sq. ft. per gallon on most old surfaces to two hundred and fifty (250) sq. ft. per gallon fresh, well-troweled concrete.
 6. Manufacturer/Contractor shall submit to the Architect material submittals with application procedure.
 7. All adjacent construction including finished walls, storefront, doors, glazing, etc., to be protected from concrete pouring operations. Any required repair or replacement of damaged materials will be by this Contractor.
- E. Surfaces Not in Contact with Forms:
1. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-saturated sand, water-fog spray, or saturated burlap.
 2. Final Curing: Begin after initial curing but before surface is dry.

3.09 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4500 - Quality Control Services.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.

3.10 DEFECTIVE CONCRETE

- A. Repair or replacement of defective concrete will be determined by the Architect. The cost of additional testing shall be borne by Contractor when defective concrete is identified.

3.11 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

END OF SECTION

**SECTION 03 4500
PRECAST CONCRETE CONSTRUCTION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 - General Requirements Specification Sections, apply to the Work of this Section.
- B. Architectural precast concrete as shown on the drawings., including, but not limited to:
 - 1. All concrete and admixtures.
 - 2. All forming materials.
 - 3. Provide and install reinforcement that is additional to that required by drawings, but which is required for lifting and erection purposes.
 - 4. Providing all reinforcing chairs, lifting attachments, leveling shims, etc. incorporated into concrete.
- C. Colored concrete site benches. (Refer to "SD" Sheets)
- D. Provide all labor, materials, equipment, services, necessary or required to fully complete all precast concrete work shown on the drawings or specified herein.
 - 1. Integral colored concrete exterior site and interior building benches, refer to details.
 - 2. Parking bumpers.
 - 3. Integral colored concrete wall caps, window sills, display case sills and locker benches as detailed.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Cast-in-Place Concrete and Masonry Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete: Admixtures.
- C. Section 03 4713 - Tilt-Up Concrete Construction/Thermomass
- D. Section 04 2000 - Unit Masonry - Installation only of precast concrete wall caps and window sills.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete 2016.
- B. ACI 318 - Building Code Requirements for Structural Concrete and Commentary 2014 (Errata 2018).
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- F. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field 2021a.
- G. ASTM C33/C33M - Standard Specification for Concrete Aggregates 2018.
- H. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic-Cement Concrete 2020.
- I. ASTM C150/C150M - Standard Specification for Portland Cement 2020.
- J. ASTM C260/C260M - Standard Specification for Air-Entraining Admixtures for Concrete 2010a (Reapproved 2016).
- K. ASTM C330/C330M - Standard Specification for Lightweight Aggregates for Structural Concrete 2017a.
- L. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.

- M. AWS D1.1/D1.1M - Structural Welding Code - Steel 2020.
- N. PCI MNL-117 - Manual for Quality Control for Plants and Production of Architectural Precast Concrete Products 2013.
- O. PCI MNL-120 - PCI Design Handbook - Precast and Prestressed Concrete 2017.
- P. PCI MNL-122 - Architectural Precast Concrete 2007.
- Q. PCI MNL-123 - Design and Typical Details of Connections for Precast and Prestressed Concrete 1988.
- R. PCI MNL-135 - Tolerance Manual for Precast and Prestressed Concrete Construction 2000.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's information on accessory products, including pigments, admixtures, inserts, plates, etc.
- B. Shop Drawings: Indicate layout, unit locations, configuration, unit identification marks, reinforcement, integral insulation, insulated panel system connectors, connection details, support items, location of lifting devices, dimensions, openings, and relationship to adjacent materials. Provide erection drawings.

1.05 QUALITY ASSURANCE

- A. This Contractor shall guarantee his work for a period of one (1) year from date of Substantial Completion. Guarantee shall be in form found in Section 01 7836 - Form of Guarantee

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handling: Lift and support precast units only from support points.
- B. Blocking and Lateral Support During Transport and Storage: Use materials that are clean, non-staining, and non-harmful to exposed surfaces. Provide temporary lateral support to prevent bowing and warping.
- C. Protect units to prevent staining, chipping, or spalling of concrete.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Architectural Precast Concrete:
 - 1. Upwall Precast Concrete, telephone (435) 673-9377.
 - 2. Brailsford Cast Stone, Inc., telephone (801) 491-6272. www.brailsfordcast.com.
 - 3. CONFAB Concrete, telephone (801) 544-9054. www.confab-precast.com
 - 4. Reliance Precast Systems, Inc. telephone (303) 833-4048. www.relianceprecast.com
 - 5. Substitutions: See Section 01 6000 - Product Requirements.\

2.02 PRECAST UNITS

- A. Precast Architectural Concrete Units: Comply with PCI MNL-120, PCI MNL-122, PCI MNL-123, PCI MNL-135, and ACI 318.
 - 1. Design Loads: Static loads, anticipated dynamic loading, including positive and negative wind loads, thermal movement loads, and erection forces as defined by applicable code.
 - 2. Calculate structural properties of units in accordance with ACI 318.
 - 3. Accommodate construction tolerances, deflection of building structural members, and clearances of intended openings.
 - 4. Provide connections that accommodate building movement and thermal movement and adjust to misalignment of structure without unit distortion or damage.

2.03 REINFORCEMENT

2.04 MATERIALS

- A. Comply with requirements of Section 03 3000 - Cast-In-Place Concrete.
- B. The following are in addition to requirements specified in Section 03 3000 - Cast-In-Place Concrete.

1. Concrete shall contain the maximum amount of coarse aggregate consistent with strength and placability.
2. Batching and Depositing Materials: The quantity of concrete being mixed in a mixer should not be less than one-third (1/3) of the capacity of the mixing drum (a minimum of three (3) yards in a nine (9) yard truck) and should always be in full yard increments. After adding all dry ingredients, the truck hopper and all fins should be washed with at least ten (10) gallons of water and mixed for a minimum of fifteen (15) minutes. Concrete mix control must be such as to provide good batch-to-batch uniformity. The slump of the concrete should be consistent throughout the project and no water should be added after a portion of the batch has been discharged. Concrete which has started to set should not be retempered, but must be discarded. It must be deposited near its final position to avoid segregation due to rehandling or flowing.
- C. Bond Breaker: Polymerized solution containing no oils, waxes, paraffins, or other material which could affect bond of subsequent finishes or natural appearance of exposed concrete surfaces.
- D. Anchors and Inserts: Provide inserts, dowels, bolts, nuts, washers and other items shown to be cast in panels or required for connecting panels to adjacent work, including inserts required for pick-up.
 1. Structural Steel Shapes: ASTM A36.
 2. Malleable Iron Castings: ASTM A47, Grade 32510.
 3. Carbon Steel Castings: ASTM A27, Grade 60-30.
 4. Hot-Dip galvanized iron and steel anchors and inserts and connecting devices: ASTM 153.
 5. Anchors which are to be drilled and screwed into the floor for bracing, shall be similar to Dayton Superior T13 coil anchor or other concealed anchors.
- E. Forms: Wood, metal, or other substantial material to maintain forms in good alignment and produce required finish. Provide external bracing to prevent form displacement during casting operations. (Note: Forms that transfer wood grain etc. are not acceptable.)
- F. Color additive:
 1. Refer to Section 03 3000 - Cast-In-Place Concrete for concrete color additive specification, color as selected by Architect.
 2. The same selected fine aggregates, cement and additives must be used consistently throughout the casting of precast items in order to maintain consistent appearance.
 3. Design compressive strength at twenty-eight (28) days, five thousand (5,000) psi minimum.
 4. Total Air Content: Three percent (3%) to six percent (6%).
 5. Concrete color as selected by the Architect.
 - a. The Contractor shall assume a cost for colorant of sixty dollars (\$60.00) per yard.

2.05 FABRICATION

- A. Fabricate in conformance with PCI MNL-117 and PCI MNL-135.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that building structure, anchors, devices, and openings are ready to receive work of this section.

3.02 PREPARATION

- A. Provide for erection procedures and induced loads during erection. Maintain temporary bracing in place until final support is provided.

3.03 CASTING UNITS

- A. Coordinate installation of inserts and anchorages required to be set into concrete.
- B. Forms: Place forms carefully to prevent damage to casting slab surfaces. Erect and brace forms to receive reinforcing steel anchors, inserts, and other items.

- C. Reinforcing and Inserts: Set and tie reinforcing steel as detailed on the drawings and specified in Section 03 30 00, "Cast-In-Place Concrete" or as required by the precast supplier. Locate and secure anchorages and inserts and other cast-in-place items.
- D. Finish: Match field mock-up sample for color and texture. Cracks, voids, protrusions, spalls, or non-uniform color or texture will not be acceptable.
 - 1. Exposed surfaces of precast work shall have a uniform sandblasted finish and texture as selected by Architect.

3.04 ERECTION AND INSTALLATION

- A. Erect units without damage to shape or finish. Replace or repair damaged panels.
- B. Erect units level and plumb within allowable tolerances.
- C. Precast wall caps, window sills, display case sills and locker benches will be set by masonry contractor.

3.05 TOLERANCES

- A. Erect members level and plumb within allowable tolerances. Conform to PCI MNL-135 , except as specifically amended below.

3.06 PATCHING

- A. Patch holes in the floor or surfaces caused by lifting and bracing devices. Comply with concrete surface repair requirements of Section 03 30 00, "Cast-In-Place Concrete."
 - 1. Patching and Cured Concrete
 - a. Field appearance and texturing checks must be made before a formulation and technique is approved by the Architect and any job patching done on holes, rock pockets, or other major imperfections. When vertical surfaces are involved, provision should be made on a test piece to perform this testing. The test mixes should include the same brand and proportion of acrylic bonding agent that will be used on the job, since it might cause a minor color change.
 - b. Texturing is usually completed prior to patching imperfections. When preparing for patching, the substrate should be thoroughly moistened. The same acrylic bonding agent as used in the test mixes should be applied to the substrate immediately prior to patching. The acrylic-modified patching mix, using the materials and proportions selected during the test process, is applied and lightly brushed or otherwise finished consistent with adjacent concrete. A liquid curing membrane should not be used.
 - 2. No plaster materials will be used for repair work.
- B. Repair of other defective or damaged surfaces will be permitted only on acceptance of the Architect. Remove and replace items which are not acceptable for surface repairs.

END OF SECTION

**SECTION 04 2000
UNIT MASONRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Summary: Furnish all labor, materials, scaffolding and equipment and services necessary or required to fully complete all items of "Masonry" as indicated on the drawings and specified herein; also, all incidental items to effect a finished and complete job, even though such items are not shown or specifically mentioned herein.
- C. Furnishing all test specimens required by the contract drawings and specifications; such as specimens of materials, mortar cubes, masonry prisms and/or specimens cut from finished masonry. Refer to structural drawings for special inspection requirements for walls and columns.
- D. Cleaning masonry and removal of surplus material and waste.
- E. This Contractor shall be responsible for the accurate layout of walls and masonry and the placement and tying of reinforcing bars supplied under Section 03 2000 - Cast-In-Place Concrete and Masonry Reinforcement.
- F. Constructing control joints in masonry; see detail on structural drawings and architectural floor plans for location.
- G. Furnishing and placing mortar and grout in masonry.
- H. Providing and installing all shoring, bucks, etc. as required to erect masonry and protection of erected masonry and stored masonry materials.
- I. Accurate cutting of new masonry units as required by details on drawings.
- J. Coordinating manufacture and ordering of all special masonry shapes and faces.
- K. Clean-up and removal of debris as a result of this work.
- L. Mortar and grout.
- M. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Cast-in-Place Concrete and Masonry Reinforcing: Reinforcing steel for grouted masonry.
- B. Section 03 3000 - Cast-in-Place Concrete: Placing of sleeves, anchorages and steel dowels.
- C. Section 05 5000 - Metal Fabrications: Fabricated steel items.
- D. Section 06 1000 - Carpentry: Nailing strips built into masonry.
- E. Materials testing paid for by the Owner.

1.03 REFERENCE STANDARDS

- A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- D. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement 2018, with Editorial Revision (2018).
- E. ASTM A641/A641M - Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire 2019.
- F. ASTM C90 - Standard Specification for Loadbearing Concrete Masonry Units 2016a.

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- G. ASTM C91/C91M - Standard Specification for Masonry Cement 2012.
- H. ASTM C129 - Standard Specification for Nonloadbearing Concrete Masonry Units 2017.
- I. ASTM C140/C140M - Standard Test Methods of Sampling and Testing Concrete Masonry Units and Related Units 2017a.
- J. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar 2011.
- K. ASTM C150/C150M - Standard Specification for Portland Cement 2018.
- L. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2006 (Reapproved 2011).
- M. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2014a.
- N. ASTM C387/C387M - Standard Specification for Packaged, Dry, Combined Materials for Concrete and High Strength Mortar 2015.
- O. ASTM C404 - Standard Specification for Aggregates for Masonry Grout 2011.
- P. ASTM C476 - Standard Specification for Grout for Masonry 2018.
- Q. ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry 2017.
- R. ASTM C979/C979M - Standard Specification for Pigments for Integrally Colored Concrete 2016.
- S. ASTM C1314 - Standard Test Method for Compressive Strength of Masonry Prisms 2016.
- T. ASTM C1357 - Standard Test Methods for Evaluating Masonry Bond Strength 2009.
- U. ASTM C1714/C1714M - Standard Specification for Preblended Dry Mortar Mix for Unit Masonry 2016.
- V. ASTM E514/E514M - Standard Test Method for Water Penetration and Leakage Through Masonry 2014a.
- W. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.
- X. BIA Technical Notes No. 7 - Water Penetration Resistance - Design and Detailing; 2005.

1.04 SUBMITTALS

- A. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
- B. Material Samples: Provide complete standard color line for each kind of block type required. Mortar samples.
- C. Test Reports: Test reports for each type of building block used are to be submitted to the Architect/Engineer for review. Testing and reports are to be completed by an independent laboratory. Test reports shall show:
 - 1. Compressive strength.
 - 2. Twenty-four (24) hour cold water absorption.
 - 3. Saturation coefficient.
 - 4. Initial rate of absorption (suction).
- D. This Contractor shall submit mortar and grout mix designs to the Architect/Engineer for review.
- E. Shop drawings for fabrication, bending and placement of reinforcing bars shall comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures." Show bar schedules, diagrams of bent bars, stirrup spacing, lateral ties and other arrangements and assemblies as required for fabrication and placement of reinforcement for masonry work.

1.05 QUALITY ASSURANCE

- A. All masonry units used in the building construction shall be manufactured in a single batch.
 - 1. The block manufacturer shall review the number of units ordered by the mason in relationship to the apparent number required for this project. Notify the General Contractor if quantities appear inadequate.

- B. Testing: Bid under separate contract by Owner. Report test results in writing to Owner, Architect and Contractor on same day tests are made.
 - 1. Masonry testing to be paid for by the Owner includes preconstruction tests and testing during construction.
 - 2. Provide proposed mortar and grout design mix to be used, to the Architect/Engineer for review.
 - 3. Grout block and mortar shall be tested for every five thousand (5,000) sq. ft. of wall.
 - 4. Sampling Of In-Place Masonry: When field test prisms do not meet applicable strength requirements, or when verification of the materials or construction procedures is required, a prism or prisms or core may be cut from the finished masonry in accordance with approved procedures.
- C. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
- D. This Contractor shall guarantee his work for a period of one (1) year from date of Substantial Completion. Guarantee shall be in form bound in Section 01 7836 - Form of Guarantee.

1.06 MOCK-UP

- A. Furnish Sample Panels
 - 1. A minimum of four (4) sample panels, 8' long by 8' high of the proposed color range, texture, bond, mortar, joint type and workmanship.
 - 2. Erect panel in the presence of the Architect/Owner before installation of materials, sample panel shall face south.
 - 3. Provide separate panels for each type of block or mortar color
 - 4. Do not start work until Architect/Owner have accepted sample panel.
 - 5. Use panel as standard of comparison for all masonry work built of same material.
 - 6. Do not destroy or move panel until work is completed and accepted by Owner and Architect.
 - 7. Sample Panel shall face south.

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. Store block off ground to prevent contamination by mud, dust or material likely to cause staining or other defects.
 - 2. Cover materials when necessary to protect from elements.
- B. Protect reinforcement from elements.
- C. Mortar Materials
 - 1. Sand shall be kept dry and protected from freezing.
 - 2. Cement and lime shall be stored off the ground and protected from moisture. In extreme weather, it should be stored in an enclosed space such as a building or trailer.

PART 2 PRODUCTS

2.01 CONCRETE MASONRY UNITS

- A. Concrete Block: Comply with referenced standards and as follows:
 - 1. Colored Concrete Masonry Units
 - a. 8" high colored Concrete Masonry Units.
 - b. Refer to drawings for width and height dimensions and locations.
 - c. Color: As selected by Architect.
 - 2. Non-Colored Concrete Masonry Units
 - a. 8" high non-colored Concrete Masonry Units
 - b. Refer to drawings for width and height dimensions and locations.
 - c. Color: Standard grey.
 - 3. Special Shapes: Provide non-standard blocks configured for corners.
 - a. Preformed single and double bullnose and special shapes as indicated.

- b. All interior, exposed, outside corners shall be provided with a bullnose corner (typ.). No factory bullnosing shall be allowed. All bullnosed corners shall be hand formed after walls are constructed.
- 4. Load-Bearing Units: ASTM C90, lightweight.
 - a. Exposed Faces: Special color and texture where indicated, as follows: Standard, Honed and Split Face.
- 5. Non-Loadbearing Units: ASTM C129.
 - a. Lightweight.
- 6. Manufacturers:
 - a. Amcor Masonry, Inc., North Salt Lake, Utah, telephone (800) 800-4004
www.amcormasonry.com
 - b. Buehner Block Co., Salt Lake City, Utah, telephone (800) 999-2565
www.buehnerblock.com
 - c. Lehi Block Co., Lehi, Utah, telephone (801) 768-8401 www.lehiblock.com
 - d. Richfield Block, Co., Richfield, Utah, telephone (435) 896-4071
 - e. Sunroc Corp., St. George, Utah, telephone (435) 634-2200 www.sunroc.com

2.02 MORTAR AND GROUT MATERIALS

- A. Portland Cement: ASTM C150/C150M, Type I, II or III; color as required to produce approved color sample.
 - 1. Low alkali
 - 2. Use same brand and type for exposed work.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Mortar Aggregate: ASTM C144.
- D. Grout Aggregate: ASTM C404.
- E. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
 - 1. Color(s): As selected by Architect from manufacturer's full range.
- F. Water: Clean and potable.
- G. Sand: Shall be clean, fine and free of organic material.
- H. Packaged Dry Material for Mortar for Unit Masonry: Premixed Portland cement, hydrated lime, and sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
 - 1. Type: Type S.
 - 2. Type: Type M at below grade conditions
 - 3. Color: Mineral pigments added as required to produce approved color sample.
 - 4. Strength: Refer to Civil drawings.
- I. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
 - 1. Type: Fine and Course.
 - 2. Strength: Refer to Civil Drawings.
 - 3. Course grout shall be used where grout space is 2" or wider in horizontal dimension and fine grout where less than 2".

2.03 ACCESSORIES

- A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
 - 1. Manufacturers:
 - a. Dur-O-Wall rapid control joint wide flange.
 - b. Equal, as approved by Architect.
- B. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
 - 1. As recommended by block manufacturer

2.04 MORTAR AND GROUT MIXING

- A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification.
 - 1. Masonry below grade and in contact with earth: Type M.
 - 2. Exterior, loadbearing masonry: Type S.
 - 3. Exterior, non-loadbearing masonry: Type S.
 - 4. Interior, loadbearing masonry: Type S.
 - 5. Interior, non-loadbearing masonry: Type S.
 - 6. Refer also to Civil Drawings.
- B. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches (50 mm) or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches (50 mm).
 - 1. Refer also to structural drawings
- C. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.

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. Hollow Metal Door and Window Frames:
 - 1. Coordinate layout, and setting of hollow metal door and window frames as required by drawings with Installation Contractor.
 - 2. Using appropriate frame anchors, (provided by 08 10 00, "Hollow Metal Doors and Door and Window Frames") set and grout frames along with masonry wall cavity or cell grouting.
 - 3. Protect all frames from damage during construction.
- B. Direct and coordinate placement of metal anchors supplied for installation under other sections.
- C. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.03 COLD AND HOT WEATHER REQUIREMENTS

- A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

3.04 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 (200 mm).
 - 3. Mortar Joints: As noted below.
 - a. "Tool" all joints when "thumb-print" hard with an appropriate sized tool.
 - b. All joints which are concealed by other construction materials and finishes shall be "tooled" (no exceptions).
 - c. All exposed interior mortar joints at honed masonry shall be "raked." All exterior and concealed mortar joints shall be "concave," unless otherwise noted.

3.05 PLACING AND BONDING

- A. In general, the coursing should be planned to have a dimension of 16" horizontally and 8" vertically center of block to center of adjacent block (except as dimensioned on drawing). This will necessitate a joint of approximately 3/8" for concrete masonry units.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Lay exposed masonry in running bond in the field unless otherwise noted. Refer to elevations and detailing.
- D. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- E. Remove excess mortar and mortar smears as work progresses.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Structural Bond: All corners of masonry walls and partitions shall be bonded in each course and all intersecting masonry walls shall be anchored to connecting masonry with bond beam reinforcing bars at same size and spacing as masonry wall reinforcing in grouted cells. Corrugated metal brick ties will not be allowed.
- I. Construction, Laying, and Grouting
 - 1. All reinforced grouted masonry shall be laid as specified in above paragraph.
 - 2. All reinforced hollow unit masonry shall be built to preserve the unobstructed vertical continuity of the cells to be filled. Walls and cross webs forming such cells to be filled shall be full-bedded in mortar to prevent leakage of grout. All head (or end) joints shall be solidly filled with mortar for a distance in from the face of the wall or unit not less than the thickness of the longitudinal face shells. Bond shall be provided by lapping units in successive vertical courses or by equivalent mechanical anchorage.
 - 3. Vertical cells to be filled shall have vertical alignment sufficient to maintain a clear, unobstructed continuous vertical cell measuring not less than 2" by 3".
 - 4. Vertical reinforcement shall be held in position at top and bottom and at intervals not exceeding one hundred and ninety-two (192) diameters of the reinforcement.
 - 5. All cells containing reinforcement shall be filled solidly with grout. Grout shall be poured in lifts of 4' in height. All grout shall be consolidated by vibrating and then reconsolidated by again vibrating later, before plasticity is lost.
 - 6. Splices in Reinforcement: Splices may be made only at such points and in such manner that the structural strength of the member will not be reduced. Lapped splices shall be as noted in the Structural Drawings. Welded or mechanical connections shall develop the strength of the reinforcement. When lap is accomplished by placing bars in adjacent cells, the length of lap shall be increased by 6".
 - 7. Racked back corners or corner "leads," will be built no higher than the number of courses between horizontal reinforcing rods and shall stop at the course in which the next horizontal reinforcing rod is to be placed. Splicing or lapping of horizontal reinforcing rods will not be permitted within 2' of corners or ends of walls.
 - 8. When pilasters or columns are built up with and are integral with the adjacent walls, grout shall be poured into the space surrounded by the boundary wythes of the brick in the pilaster and grouted in such a manner as to completely fill all voids.
 - 9. Wherever possible, grouting shall be done from the inside face of the masonry. Extreme care shall be used to prevent any grout or mortar from staining the face of masonry to be left exposed or painted. If any grout or mortar does contact the face of such masonry, it shall be removed immediately. Protect all sills, ledges, offsets, etc. from droppings of mortar and protect door jambs and corners from damage during construction.
- J. Joining of Work
 - 1. Where fresh masonry joins masonry that is partially set or totally set, the exposed surface of the set masonry shall be cleaned and lightly wetted so as to obtain the best possible bond with the new work. All loose block and mortar shall be removed.

2. If it becomes necessary for construction purposes to "stop off" a horizontal run of masonry, this shall be done only by racking back 1/2 block length in each course except when corner guides are used, and if grout is used, stopping the grout 4" back of the rack. Toothing will not be permitted.
 3. In grouted construction when grouting is stopped for one (1) hour or longer, the grout pour shall be stopped not less than 1/2" below the top of the last course laid except at the finishing course.
- K. Masonry Veneer
1. Lay exposed masonry in running bond in the field. Refer to exterior elevations and details for special coursing at top of masonry walls and at sills of windows.
 2. Masonry Veneer is to be laid with a gap, specified anchors, etc., as required between veneer and back up wall. See details on the drawings.

3.06 MASONRY FLASHINGS

- A. When flashing is to be laid on or against masonry, the surface of the masonry shall be smooth and free from projections which might puncture the flashing material.

3.07 CONTROL AND EXPANSION JOINTS

- A. Do not continue horizontal joint reinforcement through control or expansion joints.
- B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.

3.08 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4500 - Quality Control Services.

3.09 CLEANING

- A. Cut out any defective work in exposed masonry and repoint the mortar.
- B. Clean all exposed masonry.
1. Apply cleaning agent to small sample wall area of in location acceptable to the Architect.
 2. Do not proceed with cleaning until sample area is approved by the Architect/Engineer.
 3. Clean initially with stiff brushes and water.
 4. Clean block with Carborundum stone.
- C. When cleaning agent is required.
1. Follow block manufacturer's recommendations.
 2. Thoroughly wet surface of masonry on which no green efflorescence appears.
 3. Scrub with acceptable cleaning agent.
 4. Immediately rinse with clear water.
 5. Do small sections at a time.
 6. Work from top to bottom.
 7. Protect all sash, metal lintels and other corrodible parts when masonry is cleaned with acid solution.
 8. Remove white or green efflorescence in accordance with block manufacturer's recommendations.
 9. Adjust pressure of washers so as not to "pock," sandblast or otherwise damage faces of masonry units. All units damaged in such manner shall be removed and replaced by the masonry contractor at no expense to the Owner.

3.10 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.
- B. Wall Covering
1. During erection, and after completion, cover top of all walls with strong waterproof membrane.
 2. Extend cover minimum of 24" (610 mm) down both sides.

3. Hold cover securely in place and maintain throughout construction until all walls are covered with roofing membrane and/or cap flashings.
- C. Staining
 1. Prevent grout or mortar from staining the face of masonry to be left exposed or painted.
 - a. Immediately remove grout or mortar in contact with face of such masonry.
 - b. Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.
- D. Staining
 1. Prevent grout or mortar from staining the face of masonry to be left exposed or painted.
 - a. Immediately remove grout or mortar in contact with face of such masonry.
 - b. Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.
- E. Cold Weather Protection
 1. Preparation
 - a. If ice or snow has formed on masonry bed, remove by carefully applying heat until top surface is dry to the touch.
 - b. Remove all masonry frozen or damaged.
 2. When brick suction exceeds recommendations, sprinkle with heated water:
 - a. When unit are above thirty-two degrees (32°) F., heat water above seventy degrees (70°) F.
 - b. When units are below thirty two-degrees (32°) F., heat water above one hundred thirty degrees (130°) F.
 3. Use dry masonry units.
 4. Do not use wet or frozen units.
- F. Construction requirements while work is progressing.
 1. Air Temperature forty degrees (40°) F. to thirty-two degrees (32°) F.
 - a. Heat sand or mixing water to produce mortar temperatures between forty degrees (40°) F. and one hundred twenty degrees (120°) F.
 2. Air Temperature thirty-two degrees (32°) F. to twenty-five degrees (25°) F.
 - a. Heat sand and mixing water to produce mortar temperatures between forty degrees (40°) F. and one hundred twenty degrees (120°) F.
 - b. Maintain temperatures of mortar on boards above freezing.
 - c. Heat grout materials to ninety degrees (90°) F. to produce in-place grout temperature of seventy degrees (70°) F. at end of work day.
 3. Air Temperature twenty-five degrees (25°) F. to twenty degrees (20°) F.
 - a. Heat sand and mixing water to produce mortar temperatures between forty degrees (40°) F. and one hundred twenty degrees (120°) F.
 - b. Maintain mortar temperatures on boards above freezing.
 - c. Use salamanders or other heat sources on both sides of walls under construction.
 - d. Use windbreaks when wind is in excess of fifteen (15) mph.
 - e. Heat grout materials to ninety degrees (90°) F. to produce in-place grout temperature of seventy degrees (70°) F. at end of work day.
 4. Air Temperature twenty degrees (20°) F. and Below
 - a. Heat sand and mixing water to produce mortar temperatures between forty degrees (40°) F. and one hundred twenty degrees (120°) F.
 - b. Provide enclosures and auxiliary heat to maintain air temperature above thirty- two degrees (32°) F.
 - c. Minimum temperature of units when laid: twenty degrees (20°) F.
 - d. Heat grout materials to ninety degrees (90°) F. to produce in-place grout temperature of seventy degrees (70°) F. at end of work day.
- G. Protection Requirements for Completed Masonry and Masonry Not Being Worked On.
 1. Mean daily air temperature forty degrees (40°) F. to thirty-two degrees (32°) F.
 - a. Refer to paragraph 3.11.B.

2. Mean daily air temperature thirty-two degrees (32°) F. to twenty-five degrees (25°) F.
 - a. Refer to paragraph 3.11.B.
3. Mean daily air temperature twenty-five degrees (25°) F. to twenty degrees (20°) F.
 - a. Completely cover masonry with insulating blankets or equal protection for twenty-four (24) hours, forty-eight (48) hours for grouted masonry.
 - b. Refer to paragraph 3.11.B
4. Mean daily air temperature twenty degrees (20°) F. and below:
 - a. Maintain masonry temperature above thirty-two degrees (32°) F. for twenty-four (24) hours by:
 - Enclosure and supplementary heat
 - OR
 - Electric heating blankets
 - OR
 - Infrared lamps
 - OR
 - Other accepted methods acceptable to the Architect/Engineer.
 - b. Refer to paragraph 3.11.B.

H.

END OF SECTION

**SECTION 04 2001
MASONRY VENEER**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Furnish all labor, materials, equipment, tools and services required to fully complete all Masonry Veneer work as is indicated on the drawings and/or specified herein including, but not limited to, the following described items.
- B. Clay Facing Brick
- C. Mortar and grout.
- D. Integral water-repellent admixtures.
- E. Reinforcement and anchorage.
- F. Flashings.
- G. Installation of lintels.
- H. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Reinforcing: Masonry reinforcing.
- B. Section 05 1000 - Structural Steel Framing
- C. Section 05 5000 - Metal Fabrications: fabricated steel items.
- D. Section 06 1000 - Carpentry: Wood stud backup for masonry veneer.
- E. Section 07 1900 - Water Repellents: Exterior sealer.
- F. Section 07 6200 - Flashing and Sheet Metal: Through-wall masonry flashings.
- G. Section 07 9200 - Joint Sealants: Sealing control and expansion joints.

1.03 REFERENCE STANDARDS

- A. TMS 402/602 - Building Code Requirements and Specification for Masonry Structures 2016.
- B. ACI 530.1/ASCE 6/TMS 602 - Specification For Masonry Structures; American Concrete Institute International; 2008.
- C. ASTM C67 - Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile 2017.
- D. ASTM C91/C91M - Standard Specification for Masonry Cement 2012.
- E. ASTM C150/C150M - Standard Specification for Portland Cement 2018.
- F. ASTM C207 - Standard Specification for Hydrated Lime for Masonry Purposes 2006 (Reapproved 2011).
- G. ASTM C216 - Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale) 2017a.
- H. ASTM C270 - Standard Specification for Mortar for Unit Masonry 2014a.
- I. BIA Technical Notes No. 7 - Water Penetration Resistance – Design and Detailing 2017.
- J. BIA Technical Notes No. 28B - Brick Veneer/Steel Stud Walls 2005.
- K. BIA Technical Notes No. 46 - Maintenance of Brick Masonry 2017.
- L. ASTM D1056 - Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber; 2007.
- M. ASTM D1784 - Standard Specification for Rigid Polyvinyl Chloride (PVC) Compounds and Chlorinated Polyvinyl Chloride (CPVC) Compounds; 2011.
- N. ASTM D2240 - Standard Test Method for Rubber Property—Durometer Hardness; 2005(2010).

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data for masonry units, reinforcement and anchorage, mortar, integral water-repellent admixture, flashing,, drainage, expansion joints, and cleaning solution..
- C. Samples:
 - 1. Submit four samples of [masonry unit] units to illustrate color, texture, and extremes of color range.
 - 2. Submit two sections of the flashing demonstrating lap joint.
 - 3. Submit two sections of the expansion joint material, flashing accessories and drainage materials.
- D. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
- E. Test Reports: Test reports for each type of veneer block used are to be submitted to the Architect/Engineer for review. Testing and reports are to be completed by an independent laboratory. Test reports shall show:
 - 1. Compressive strength.
 - 2. 24 hour cold water absorption.
 - 3. Saturation coefficient.
 - 4. Initial rate of absorption (suction).

1.05 QUALITY ASSURANCE

- A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
 - 1. Maintain one copy of each document on project site.

1.06 MOCK-UP

- A. Construct a minimum of four (4) sample panels, 4'-0" long by 4'-0" high of the proposed color range, texture, bond, mortar joint type and workmanship.
 - 1. Provide separate panels for each type of block or mortar color.
 - 2. Use panel as standard of comparison for all masonry work built of same material.
 - 3. Sample panels shall face south.
 - 4. Apply water repellant/anti-graffiti sealer by Section 071900 Contractor.
- B. Locate where directed.

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 FIELD CONDITIONS

- A. Cold and Hot Weather Requirements: Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.

1.09 GUARANTEE

- A. The Contractor shall guarantee his work for a period of 5 years from date of Substantial Completion. Guarantee shall be in form found in Section 01 7800.

PART 2 PRODUCTS

2.01 BRICK UNITS

- A. Clay Facing Brick: ASTM C216, Type FBX, Grade SW.
 - 1. Basis of Design: Interstate Brick "Midnight Black"
 - 2. Actual size (Emperor 3-9/16): 15-9/16 x 3-9/16 inches (395 x 90 mm) and depth of 3-9/16 inches (90 mm).
 - 3. Special shapes: Molded units (including preformed bullnoses, corners, etc) as indicated or as required to complete the work for the intended installation.
 - 4. Admixtures: Integral moisture-resistant admixture.
 - 5. Compressive Strength: 8,000 PSI minimum, measured in accordance with ASTM C67.

6. Accepted Manufacturers:
 - a. Interstate Brick Co: www.interstatebrick.com.
 - b. Substitutions: See section 01 6000 - Product requirements.

2.02 MORTAR MATERIALS

- A. Refer to General Structural Notes on Drawings.
- B. Masonry Cement: ASTM C 91, Type S.
 1. Colored mortar:
 - a. Spec Mix "Natural"
- C. Portland Cement: ASTM C 150, Type I/II; color as required to produce approved color sample.
- D. Hydrated Lime: ASTM C207, Type S.
- E. Water: Clean and potable.
- F. Accelerating Admixture: Nonchloride type for use in cold weather.

2.03 ADMIXTURES

- A. Water-Repellent Admixture System: Water repellent compound designed to reduce capillarity. For all masonry units and mortar.
 1. Performance Requirements: Masonry units and mortar shall meet the following requirements:
 - a. Water Permeance of Masonry: Use water-repellent admixtures capable of providing masonry assembly performance of no visible dampness on backs of three wall specimens after 72 hours of testing when evaluated using ASTM E 514.
 - b. Flexural Bond Strength: ASTM C 1072.
 - c. Compressive Strength of Masonry Prisms: ASTM C 1314.
 - d. Drying Shrinkage of Concrete Masonry Units: ASTM C 426.
 - e. Drying Shrinkage of Masonry Mortar and Grout: ASTM C 1148.
 2. Acceptable Products:
 - a. Grace Construction Products, Product - "Dry-Block": www.dryblock.com.
 - b. BASF, Product - "Rheopel": www.basf-admixtures.com.
 - c. Euclid Chemical Co., Product - "Eucon Blocktite": www.euclidchemical.com.
 - d. Substitutions: See Section 01 6000 - Product Requirements.

2.04 REINFORCEMENT AND ANCHORAGE

- A. Reinforcing Steel: Refer to Section 03 2000 - Reinforcing.
- B. Masonry Veneer Seismic Wire Ties and Accessories (Masonry Backup Conditions):
 1. Wire Tie: Rectangular shape brick anchor, ASTM A82/A82M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B2; 0.1875 inch (4.8 mm) diameter wire, fitting into wire loops of horizontal joint reinforcement, bent to form 1 inch offset, providing additional 1 inch of vertical coursing adjustment.
 - a. Projection: As required for indicated wall cavity dimension
 - b. Acceptable Product: Byna-Lok Wire Tie manufactured by Hohmann & Barnard.
 2. Rigid Insulation Retainer: Polyvinyl chloride (PVC) clip-type retainer for rigid board insulation; attaches to loop wires on horizontal joint reinforcement.
 3. Continuous Horizontal Joint Reinforcement Wire: ASTM A82/A82M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B2; 0.1483 inch (3.8 mm).
 4. Reinforcement Retaining Clip: Rigid polyvinyl chloride clip, conforming to ASTM D1784 and ASTM D2240, with ridge to secure continuous wire in mortar and 3 additional ridges to secure masonry wire tie.
- C. Masonry Veneer Seismic Anchors (Steel Stud Backup Conditions): 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
 1. Anchor plates: Not less than 0.075 inch (1.91 mm) thick, designed for fastening to structural backup through sheathing by two fasteners ; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.

2. Wire ties: Trapezoidal shape, 0.1875 inch (4.75 mm) thick.
3. Vertical adjustment: Not less than 3-1/2 inches (89 mm).
4. Continuous Horizontal Joint Reinforcement Wire: ASTM A82/A82M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M, Class B2; 0.1483 inch (3.8 mm).
5. Reinforcement Retaining Clip: Rigid polyvinyl chloride clip, conforming to ASTM D1784 and ASTM D2240, with ridge to secure continuous wire in mortar and 3 additional ridges to secure masonry wire tie.
6. Self-Sealing Transition Anchor Tape: Reinforced polyolefin base, laminated to a polypropylene layer; seals around the shaft of the screw and legs of anchors at the point of penetration.
7. Fasteners: Self-drilling stainless steel, Type 410, self-tapping screws; hex washer head, size #10 - 16, lengths required for indicated insulation and sheathing thicknesses. Provide neoprene sealing washers.
8. Acceptable Product: X-Seal S.I.S. Anchoring System manufactured by Hohmann & Barnard, Inc.

2.05 FLASHING AND DRAINAGE

- A. Manufacturers:
 1. Hohmann & Barnard, Inc (including Blok-Lok Limited): www.h-b.com
 2. WIRE-BOND: www.wirebond.com.
 3. Dupont Tyvek: www.construction.tyvek.com.
 4. Mortar Net USA Ltd: www.mortarnet.com.
 5. CavClear/Archovations, Inc: www.cavclear.com.
 6. Substitutions: See Section 01 6000 - Product Requirements.
- B. Flashing Membrane:
 1. Reinforced 40-mil thick membrane formulated with Elvaloy Kee; with pressure-sensitive adhesive.
 2. Corners and End Dams: Pre-formed seamless corners and end dams, same material as flashing membrane.
 3. Primers, Adhesives, Sealants, and Accessories: As recommended by membrane manufacturer for complete installation and compatible with Section 07 2500 - Weather Barrier System.
 4. Acceptable Products:
 - a. Flex-Flash Flashing manufactured by Hohmann & Barnard, Inc.
 - b. Rhino-Bond Flashing manufactured by Wire-Bond.
 - c. Dupont Thru-Wall Flashing manufactured by Dupont Tyvek.
- C. Metal Drip Edge:
 1. Installation only of 24 gage, 0.028 inch (0.7 mm) thick, Pre-Finished Galvanized Steel with hemmed edge, provided by Section 07 6200 - Sheet Metal Flashing and Trim.
 - a. Sealants and Accessories: As recommended by flashing membrane manufacturer for complete installation.
- D. Termination Bar:
 1. Type 304 flat stainless bar 1/8 inch x 1 inch wide, with predrilled holes for attachment.
 - a. Fasteners and Sealants: Use fasteners as recommended by flashing membrane manufacturer for substrate condition.
- E. Cavity Mortar Control: Polyester mesh trapezoidal shaped panels impregnated with UV protection, biocide to resist mold and flame retardant, designed to prevent mortar droppings from clogging weeps and allow proper cavity drainage. Sized to thickness of wall cavity
 1. Acceptable Product: Mortar Net with Insect Barrier manufactured by Mortar Net USA Ltd.
- F. Weeps: Medium density polyethylene, clear round plastic weep tubes, 3/8 inch outside diameter x 1/4 inch inside diameter x 4 inches long.
- G. Metal Flashing Materials: Prefinished metal flashings, as specified in Section 07 6200

2.06 MORTAR AND GROUT MIXING

- A. Mortar for Unit Masonry: ASTM C270, Proportion Specification.
 - 1. Exterior, non-loadbearing masonry; Type N.
 - 2. Interior, non-loadbearing masonry; Type O.
- B. Colored Mortar: Proportion selected pigments and other ingredients to match Architect's sample, without exceeding manufacturer's recommended pigment-to-cement ratio.
- C. Use only mortar containing integral water-repellent mortar admixture at the manufacturer's recommended addition rate and mixed according to the manufacturer's recommendations.
- D. Mixing: Use mechanical batch mixer and comply with referenced standards.
 - 1. Add integral water-repellent admixture during mixing in conformance with the admixture label instructions and the recommendations of the manufacturer.

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 FLASHING INSTALLATION

- A. Install flashing in accordance with manufacturer's instructions.
- B. Accurately fit, align, securely fasten and install free from distortion or defects.

3.03 WEEP VENTS

- A. Install weeps in veneer walls at 24 inches (600 mm) on center horizontal above through-wall flashing, above and below shelf angles and lintels, and at top and bottom of walls.
- B. Install cavity mortar diverter at base of cavity as recommended by manufacturer to prevent mortar droppings from blocking weep vents.
- C. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.

3.04 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. Brick Units:
 - 1. Bond: As indicated for different locations.
 - 2. Coursing: Three units and three mortar joints to equal 8 inches (200 mm).
 - 3. Mortar Joints: Concave.

3.05 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
- B. Lay hollow masonry units with face shell bedding on head and bed joints.
- C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
- D. Remove excess mortar as work progresses.
- E. Interlock intersections and external corners, except for units laid in stack bond.
- F. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- G. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- H. Isolate top joint of masonry veneer from horizontal structural framing members or support angles with with horizontal expansion joint material..

3.06 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER

- A. Install masonry reinforcement system components in accordance with manufacturer's printed installation instructions.
- B. Masonry Back-Up:
 - 1. Refer to Section 04 2731 - Reinforced Unit Masonry for installation of horizontal joint reinforcement.
 - 2. Secure rigid insulation in place with rigid insulation retainer at each masonry wall tie connector location on horizontal joint reinforcement.
 - 3. Install masonry wall tie at each masonry wall tie connector location on horizontal joint reinforcement; install ties as exterior wythe of masonry construction progresses.
 - 4. Set reinforcement retaining clip in full mortar bed at each masonry wall tie location; secure tie wires in correct size ridges.
 - 5. Secure continuous masonry joint reinforcement wire in correct size ridge in reinforcement retaining clip.
- C. Stud Back-Up:
 - 1. Install sealing tape at stud locations to receive veneer anchors; install tape vertically, continuous full stud length.
 - 2. Install veneer anchors at stud locations; 16 inches on center vertically, 16 inches on center horizontally.
 - 3. Screw-attach veneer anchor to stud face; bridging insulation and sheathing to ensure full contact of veneer anchor legs with stud face.
 - 4. Install masonry wall tie at each veneer anchor location; install ties as exterior wythe of masonry construction progresses.
 - 5. Set reinforcement retaining clip in full mortar bed at each masonry wall tie location; secure tie wires in correct size ridges.
 - 6. Secure continuous masonry joint reinforcement wire in correct size ridge in reinforcement retaining clip.

3.07 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.
 - 1. Extend flashings full width at such interruptions and at least 6 inches (152 mm), minimum, into adjacent masonry or turn up at least 1 inch (25.4 mm), minimum, to form watertight pan at non-masonry construction.
 - 2. Remove or cover protrusions or sharp edges that could puncture flashings.
 - 3. Seal lapped ends and penetrations of flashing before covering with mortar.
- B. Extend metal flashings through exterior face of masonry and turn down to form drip.
- C. Lap end joints of flashings at least 6 inches (152 mm), minimum, and seal watertight with flashing sealant/adhesive.

3.08 LINTELS

- A. Install loose steel lintels over openings. Refer to Veneer Lintel Schedule on Structural Drawings
- B. Maintain minimum 6 inch (150 mm) bearing on each side of opening. Refer to Veneer Lintel Schedule on Structural Drawings

3.09 CONTROL AND EXPANSION JOINTS

- A. Install expansion joint components in accordance with manufacturer's installation instructions.
- B. Do not continue horizontal joint reinforcement through control or expansion joints.
- C. Form expansion joint as detailed on drawings.
- D. This Contractor shall coordinate locations of joints with structural columns, masonry layout, and suggested joint layout on the Drawings, including those that extend to upper floor levels.
 - 1. Maximum spacing shall be 30 feet (9.1 m) on center, unless approved by the Architect, and preferred spacing of 24 feet (7.3 m) to 28 feet (8.5 m) on center.

- E. Where masonry veneer occurs at concrete block backup, joints shall align.

3.10 TOLERANCES

- A. Maximum Variation From Unit to Adjacent Unit: 1/16 inch (1.6 mm).
- B. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft (6 mm in 3 m) and 1/2 inch in 20 ft (13 mm in 6 m) or more.
- C. Maximum Variation from Plumb: 1/4 inch (6 mm) per story non-cumulative; 1/2 inch (13 mm) in two stories or more.
- D. Maximum Variation from Level Coursing: 1/8 inch in 3 ft (3 mm in 1 m) and 1/4 inch in 10 ft (6 mm in 3 m); 1/2 inch in 30 ft (13 mm in 9 m).
- E. Maximum Variation of Joint Thickness: 1/8 inch in 3 ft (3 mm/m).

3.11 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.

3.12 CLEANING

- A. Remove excess mortar and mortar smears as work progresses.
- B. Replace defective mortar. Match adjacent work.
- C. Follow block/brick manufacturer's recommendations for cleaning.
- D. Thoroughly wet surface of masonry on which no green efflorescence appears.
- E. Clean soiled surfaces with cleaning solution.
- F. Immediately rinse with clear water.
- G. Do small sections at a time
- H. Work from top to bottom.
- I. Use non-metallic tools in cleaning operations.
- J. Protect all sash, metal lintels and other corrodible parts when masonry is cleaned with acid solution.
- K. Remove white or green efflorescence in accordance with block manufacturer's recommendations.
- L. If using pressure washers for cleaning, adjust pressure of washers so as not to "pock", sandblast or otherwise damage face of masonry units. All units damaged in such manner shall be removed and replaced by the masonry contractor at no expense to the Owner.

3.13 PROTECTION

- A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.
- B. Protection of Masonry:
 - 1. Wall Covering:
 - a. During erection, and after completion, cover top of all walls with strong waterproof membrane.
 - b. Extend cover minimum of 24 inches (610 mm) down both sides.
 - c. Hold cover securely in place and maintain throughout construction until all walls are covered with roofing membrane and/or cap flashings.
- C. Staining:
 - 1. Prevent grout or mortar from staining the face of masonry to be left exposed or painted:
 - a. Immediately remove grout or mortar in contact with face of such masonry.
 - b. Protect all sills, ledges and projections from droppings of mortar, protect door jambs and corners from damage during construction.

- D. Cold Weather Protection:
1. Preparation:
 - a. If ice or snow has formed on masonry bed, remove by carefully applying heat until top surface is dry to the touch.
 - b. Remove all masonry frozen or damaged.
 2. When brick suction exceeds recommendations, sprinkle with heated water:
 - a. When unit are above 32 F, heat water above 70 F.
 - b. When units are below 32 F, heat water above 130 F.
 3. Use dry masonry units.
 4. Do not use wet or frozen units.
- E. Construction requirements while work is progressing:
1. Air Temperature 40 degrees F to 32 degrees F:
 - a. Heat sand or mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F.
 2. Air Temperature 32 degrees F to 25 degrees F:
 - a. Heat sand and mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F.
 - b. Maintain temperatures of mortar on boards above freezing.
 - c. Heat grout materials to 90 degrees F to produce in-place grout temperature of 70 degrees F at end of work day.
 3. Air Temperature 25 degrees F to 20 degrees F:
 - a. Heat sand and mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F.
 - b. Maintain mortar temperatures on boards above freezing.
 - c. Use salamanders or other heat sources on both sides of walls under construction.
 - d. Use windbreaks when wind is in excess of 15 mph.
 - e. Heat grout materials to 90 degrees F to produce in-place grout temperature of 70 degrees F at end of work day.
 4. Air Temperature 20 degrees F and Below:
 - a. Heat sand and mixing water to produce mortar temperatures between 40 degrees F and 120 degrees F.
 - b. Provide enclosures and auxiliary heat to maintain air temperature above 32 degrees F.
 - c. Minimum temp. of units when laid: 20 degrees F.
 - d. Heat grout materials to 90 degrees F to produce in-place grout temperature of 70 degrees F at end of work day.
- F. Protection Requirements For Completed Masonry and Masonry Not Being Worked On:
1. Mean daily air temperature 40 degrees F to 32 degrees F:
 - a. Refer to paragraph 3.12-B.
 2. Mean daily air temperature 32 degrees F to 25 degrees F:
 - a. Refer to paragraph 3.12-B.
 3. Mean daily air temperature 25 degrees F to 20 degrees F:
 - a. Completely cover masonry with insulating blankets or equal protection for 24 hours, 48 hours for grouted masonry.
 - b. Refer to paragraph 3.12-B.
 4. Mean daily air temperature 20 degrees F and below:
 - a. Maintain masonry temperature above 32 degrees F for 24 hours by:
 - 1) Enclosure and supplementary heat or
 - 2) Electric heating blankets or
 - 3) Infrared lamps or
 - 4) Other methods acceptable to the Architect/Engineer.
 - b. Refer to paragraph 3.12-B.

END OF SECTION

**SECTION 05 1000
STRUCTURAL STEEL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Structural steel framing members.
- C. Base plates, shear stud connectors and expansion joint plates.
- D. Grouting under base plates.

1.02 RELATED REQUIREMENTS

- A. Section 05 2000 - Steel Joists, Girders and Deck.
- B. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.

1.03 REFERENCE STANDARDS

- A. AISC 303 - Code of Standard Practice for Steel Buildings and Bridges 2016.
- B. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges 2016.
- C. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- D. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2012.
- E. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished 2013.
- F. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- G. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- H. ASTM A242/A242M - Standard Specification for High-Strength Low-Alloy Structural Steel 2013 (Reapproved 2018).
- I. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2014 (Editorial 2017).
- J. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength 2014.
- K. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric) 2014.
- L. ASTM A449 - Standard Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use 2014 (Reapproved 2020).
- M. ASTM A490 - Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength 2014a.
- N. ASTM A490M - Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric) 2014a.
- O. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2013.
- P. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2014.
- Q. ASTM A514/A514M - Standard Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding 2014.
- R. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality 2014.
- S. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts 2015.

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- T. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric) 2007 (Reapproved 2013).
- U. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel 2015.
- V. ASTM A588/A588M - Standard Specification for High-Strength Low-Alloy Structural Steel, up to 50 ksi (345 MPa) Minimum Yield Point, with Atmospheric Corrosion Resistance 2019.
- W. ASTM A992/A992M - Standard Specification for Structural Steel Shapes 2011 (Reapproved 2015).
- X. ASTM A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable 2018.
- Y. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2017.
- Z. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink) 2014a.
- AA. ASTM E94 - Standard Guide for Radiographic Examination 2004 (Reapproved 2010).
- BB. ASTM E164 - Standard Practice for Contact Ultrasonic Testing of Weldments 2013.
- CC. ASTM E165/E165M - Standard Test Method for Liquid Penetrant Examination for General Industry 2012.
- DD. ASTM E709 - Standard Guide for Magnetic Particle Testing 2015.
- EE. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions 2015a.
- FF. ASTM F436/F436M - Standard Specification for Hardened Steel Washers Inch and Metric Dimensions 2016.
- GG. ASTM F436 - Standard Specification for Hardened Steel Washers 2011.
- HH. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners 2013.
- II. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength 2015, with Editorial Revision (2017).
- JJ. ASTM F1852 - Standard Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength 2011.
- KK. ASTM F2280 - Standard Specification for \loch\f1\hich\f1\93Twist Off\94 Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 150 ksi Minimum Tensile Strength 2012.
- LL. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.
- MM. AWS D1.1/D1.1M - Structural Welding Code - Steel 2015, with Errata (2016).
- NN. ITS (DIR) - Directory of Listed Products current edition.
- OO. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 1999 (Ed. 2004).
- PP. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).
- QQ. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 SUBMITTALS

- A. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.

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2. Connections not detailed.
 3. Indicate cambers and loads.
 4. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
 5. Include verified conditions as a part of Submittal. See paragraph 2.01B.
- B. Manufacturer's Mill Certificate: Certify that products meet or exceed specified requirements.
 - C. Mill Test Reports: Indicate structural strength, destructive test analysis and non-destructive test analysis.
 - D. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.
 - E. Responsibility: The Contractor shall, alone, be responsible for the correctness of all shop drawings and for all shop and field fabrication. The review or comments on any drawings shall not relieve the Contractor of any responsibility for the correctness of the details. The Architect's review covers general design of details only and if any corrections are made which would cause members not to fit or would not give sufficient strength, the Contractor shall call the Architect's attention to it at once in writing so that corrections can be made. If the Contractor fails to do this, the sole responsibility rests upon him.
 - F. Omission of any material from the Contractor's shop drawings that is shown on the working drawings or called for in the specification shall not relieve the Contractor from furnishing such material, even though the Architect reviewed the Contractor's shop drawings.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel Angles and Plates: ASTM A36/A36M.
- B. Steel W Shapes and Tees: ASTM A992/A992M.
- C. Rolled Steel Structural Shapes: ASTM A992/A992M.
- D. Cold-Formed Structural Tubing: ASTM A500/A500M, Grade B.
- E. Pipe: ASTM A53/A53M, Grade B, Finish black.
- F. High-Strength Structural Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, with matching compatible ASTM A563 or ASTM A563M nuts and ASTM F436/F436M washers.
- G. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 or ASTM A563M nuts and ASTM F436/F436M Type 1 washers.
- H. Headed Anchor Rods: ASTM A307 Grade C, plain.
- I. Welding Electrodes: ASTM A-233, E60XX or E70XX series as required for intended use.
- J. Grout: Non-shrink, non-metallic aggregate type, complying with ASTM C1107/C1107M and capable of developing a minimum compressive strength of 7,000 psi (48 MPa) at 28 days.
 1. Master Builders "Embeco Pre-Mixed Grout", mixed with water to dry pack or fluid grout consistency as required.
 - a. W.R. Meadows, CG - 86, construction grade grout, telephone (800) 342-5976
www.wrmeadows.com
 - b. L & M Construction Chemicals Inc., Dura grout, telephone (800) 362-3331
www.lmcc.com
 - c. US Spec, general purpose grout, telephone (800) 397-9903 www.usspec.com
 - d. Chemrex Inc., construction grout, telephone (800) 443-9517
- K. Paint: Steel structures painting council specifications, latest edition, one (1) coat red iron oxide shop paint, except use two (2) coats on exterior items if not galvanized. Two (2) dry mils per coat.
- L. Galvanizing: ASTM A 526-71 and A 153-73 with average weight per square foot of two (2.0) ounces and not less than 1.8 ounces per sq. ft.: applied only to items where called for.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.
- B. Field verify and obtain accurate dimensions. Report discrepancies between drawings and field dimensions to the Architect prior to commencing work.

3.02 ERECTION

- A. Erect structural steel in compliance with AISC 303.
- B. Do not field cut or alter structural members without approval of Architect.
- C. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

3.03 TOLERANCES

- A. Erect all structural steel in strict accordance with the drawings and the accepted shop drawings, aligning all components straight, plumb, and level within a tolerance of one (1) in two hundred (200).

3.04 FIELD QUALITY CONTROL

- A. Inspection & testing cost shall be coordinated by the General Contractor and paid by the Owner.
- B. Physical testing will not be required if the steel can be identified by heat and melt numbers and a mill analysis is available.
- C. In field welding, do not damage the steel. The total length of weld at any one point on cold-formed members whose yield point has been attained by cold-working and whose as-formed strength is used in the design, shall not exceed fifty percent (50%) of the over-all developed width of the cold-formed section.
 - 1. Welding, when inspection is required, shall be done under the supervision of a recognized laboratory by a qualified inspector who shall furnish the Architect and Structural Engineer with a report on forms supplied, duly verified by both the inspector and the responsible agent of the laboratory, that the welding is adequate and has been done in conformity with the plans and specifications and that the laboratory has used every means necessary to determine the quality of the weld. The testing laboratory may use gamma ray, magna flux, or any other aid to visual inspection which it may deem necessary to assure itself of adequacy of the welding.

**SECTION 05 2000
STEEL JOISTS, GIRDERS AND DECK**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials and equipment necessary to furnish and install steel roof deck as shown on drawings or herein specified.

1.02 RELATED REQUIREMENTS

- A. Section 05 1000 - Structural Steel: Grouting base plates and bearing plates. Superstructure framing.
- B. Section 05 5000 - Metal Fabrications: Non-framing steel fabrications attached to joists.
- C. Section 07 6200 - Flashing and Sheet Metal

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- B. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished 2018.
- C. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- D. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- E. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2021.
- F. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength 2014.
- G. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric) 2014.
- H. ASTM A490 - Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength 2014a.
- I. ASTM A490M - Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric) 2014a.
- J. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts 2015.
- K. ASTM A563M - Standard Specification for Carbon and Alloy Steel Nuts (Metric) 2007 (Reapproved 2013).
- L. ASTM F1852 - Standard Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength 2011.
- M. ASTM F2280 - Standard Specification for "Twist Off" Type Tension Control Structural Bolt/Nut/Washer Assemblies, Steel, Heat Treated, 150 ksi Minimum Tensile Strength 2012.
- N. AWS B2.1/B2.1M - Specification for Welding Procedure and Performance Qualification 2014 (Amended 2015).
- O. AWS D1.1/D1.1M - Structural Welding Code - Steel 2015, with Errata (2016).
- P. FM (AG) - FM Approval Guide; Factory Mutual Research Corporation; current edition.
- Q. ITS (DIR) - Directory of Listed Products current edition.
- R. SJI (SPEC) - Catalog of Standard Specifications Load Tables and Weight Tables for Steel Joists and Joist Girders 2011.

- S. SJI Technical Digest No. 9 - Handling and Erection of Steel Joists and Joist Girders 2008.
- T. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 1999 (Ed. 2004).
- U. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 SUBMITTALS

- A. Submit shop drawings to the Architect/Engineer for review. Show all shop and erection details including connections. Show all welds, both shop and field, by the current recommendations of the American Welding Society. Refer to Section 01 3300 - Submittals.
- B. Welders' Certificates: Submit manufacturer's certificates, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

- A. This Contractor shall guarantee his work for a period of one (1) year from date of Substantial Completion. Guarantee shall be in form bound in Section 01 7836 - Form of Guarantee.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Transport, handle, store, and protect products to SJI requirements.
- B. Take all means necessary to protect open web steel joists and deck before, during, and after installation and to protect the installed work of other trades. In the event of damage, immediately make all repairs and replacements necessary for the approval of the Structural Engineer/Architect and at no additional cost to the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Steel Deck
 - 1. Nucor-Vulcraft Group: www.vulcraft.com.
 - 2. ASC Pacific: www.ascprofiles.com.
 - 3. Verco: www.vercodeck.com.
 - 4. Substitutions: See Section 01 6000 - Product Requirements.

2.02 MATERIALS

- A. 1-1/2", painted type "B" steel deck over roof area as detailed on structural drawings. (Refer to Structural Notes and Drawings).
- B. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.02 ERECTION

- A. Do not permit erection of decking until joists are braced, bridged, and secured or until completion of erection and installation of permanent bridging and bracing.
- B. Do not field cut or alter structural members without approval of joist manufacturer.
- C. In field welding, do not damage the joists or decking. The total length of weld at any one point on cold formed members whose yield point has been attained by cold working and whose as formed strength is used in the design, shall not exceed fifty percent (50%) of the over all developed width of the cold formed section.
- D. After erection, prime welds, damaged shop primer, damaged galvanizing, and surfaces not shop primed, except surfaces specified not to be primed.

3.03 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4500 - Quality Control Services.

END OF SECTION

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**SECTION 05 5000
METAL FABRICATIONS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, services, transportation, etc. to furnish, fabricate and install items of metal fabrications as shown on the drawings or herein specified.
- C. All pipe handrails, guardrails, gates, brackets, etc. at stairs and as shown in the drawings.
- D. All required channels, tubes, angles, bent plates and headed stud anchors required for all stairway construction.
- E. Galvanized steel pipe bumpers. Refer to details.
 - 1. Does not include collapsible type.
- F. Galvanized steel parking lot sign assembly as detailed on Site Development (SD) Sheets.
- G. Support angles or bent plates at wall furring; refer to details on drawings.
- H. Prefabricated steel gate and support posts as shown on Site Development (SD) Sheets.
- I. Miscellaneous steel angles, plates and anchors as required.
- J. Clean-up and disposal of debris as a result of this Work.
- K. Prefabricated ladders and ship ladders.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Placement of metal fabrications in concrete.
- B. Section 03 4500 - Precast Architectural Concrete: Placement of metal fabrication in precast architectural concrete.
- C. Section 04 2000 - Unit Masonry: Placement of metal fabrications in masonry.
- D. Section 05 1000 - Structural Steel: Structural steel column anchor bolts.
- E. Section 05 2000 - Steel Joists, Girders and Deck: Structural joist bearing plates, including anchorage.
- F. Section 07 6200 - Flashing and Sheet Metal
- G. Section 10 1400 - Identifying Devices

1.03 REFERENCE STANDARDS

- A. ANSI A14.3 - American National Standard for Ladders -- Fixed -- Safety Requirements 2008.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- C. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless 2020.
- D. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- E. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates 2018.
- G. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength 2014 (Editorial 2017).
- H. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength 2014.

- I. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Minimum Tensile Strength (Metric) 2014.
- J. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes 2021.
- K. ASTM A501/A501M - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing 2014.
- L. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- M. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2017.
- N. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.
- O. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.
- P. ASTM F3125/F3125M - Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions 2015a.
- Q. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination 2012.
- R. AWS D1.1/D1.1M - Structural Welding Code - Steel 2015, with Errata (2016).
- S. SSPC-Paint 15 - Steel Joist Shop Primer/Metal Building Primer 1999 (Ed. 2004).
- T. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).
- U. SSPC-SP 2 - Hand Tool Cleaning 2018.

1.04 SUBMITTALS

- A. See Section 01 3300 - Submittals for submittal procedures.
- B. Submit drawings for metal fabrication work to the Architect for review, based on the Architect's drawings and details. Show in detail all the structural steel work included in the Contract. Submit prior to fabrication.
- C. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
 - 1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
 - 2. Responsibility: The Contractor shall, alone, be responsible for the correctness of all shop drawings and for all shop and field fabrication. The review or comments on any drawings shall not relieve the Contractor of any responsibility for the correctness of the details. The Architect's review covers general design of details only and if any corrections are made which would cause members not to fit or would not give sufficient strength, the Contractor shall call the Architect's attention to it at once in writing so that corrections can be made. If the Contractor fails to do this, the sole responsibility rests upon him.
 - 3. Omission of any material from the Contractor's shop drawings that is shown on the working drawings or called for in the specification shall not relieve the Contractor from furnishing such material.
- D. Welders' Certificates: Submit certification for welders employed on the project, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

- A. This contractor shall guarantee his work for a period of one (1) year from the date of Substantial Completion. Guarantee shall be in form bound in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 MATERIALS - STEEL

- A. Steel Sections: ASTM A36/A36M.
- B. Steel Tubing: ASTM 500, Grade B (Fy-46-KSI).
- C. Pipe: ASTM A53, type E or S, Grade B, finish as indicated.
- D. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
- E. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
- F. Paint: Steel structures painting council specifications, latest edition, one coat red iron oxide shop paint, except use two (2) coats on exterior items if not galvanized. Two (2) dry mils per coat.
- G. Galvanizing: ASTM A 526-71 and A 153-73 with average weight per square foot of two (2.0) ounces and not less than 1.8 ounces per sq. ft.: applied only to items where called for.
- H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.

2.02 MATERIALS AND WORKMANSHIP

- A. New stock of standard sizes specified or detailed; fabricated in shop producing high grade metal work. Form and fabricate to meet required conditions. Include slips, straps, bolts, screws, and other fastenings necessary to secure work. Conform work to latest edition of AISC specification and to applicable provisions of building code.
- B. The surface shall be cleaned of deposits of oil or grease by solvent. Loose mill scale, loose rust, excess welding slag, and dirt shall be removed by wire brushing, or other equivalent methods to be selected by the fabricator. All steel not encased in concrete shall receive one (1) heavy coat of paint, applied by spraying, brushing roller coating, flow coating, or dipping and thoroughly covered. Paint shall not be applied to wet, frosted or hot surfaces. Structural steel parts not in contact, but inaccessible after assembly, shall be painted two (2) coats before assembling. The surfaces of structural steel encased in concrete shall be thoroughly cleaned of all scale, rust, dirt and other foreign incrustations and shall not be painted. One coat shall be min. two (2) dry mil thick and two (2) coats shall be min. four (4) dry mils.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify conditions at site affecting work of this Section and obtain accurate dimensions. Report discrepancies between drawings and field dimensions to the Architect prior to commencing work.

3.02 PREPARATION

- A. All material, before being fabricated, shall be thoroughly wire brushed, cleaned of all scale and rust, and shall be thoroughly straightened by methods that will not injure the material before being worked on. After punching or working the component parts of a riveted member, all twists or bends shall be removed before the parts are assembled. All finished members shall be free from twists, bends or open joints, when erected.

3.03 FABRICATION AND INSTALLATION

- A. Contractor shall fabricate the material and erect same with workmen skilled in those branches of the structural steel industry. In addition to the requirements set forth herein, work shall conform to the current edition of the Specifications for Design, Fabrication and Erection of Structural Steel for Buildings of the A.I.S.C. The Contractor may, due to availability of stock and shop practice, offer substitute structural shapes which the Architect/Structural Engineer may review provided all properties are equivalent to or better than the originally specified section. Shop fabrication shall be done in the shop of a licensed fabricator.
- B. Install items plumb and level, accurately fitted, free from distortion or defects.

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- C. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
- D. Built-In Anchorage: Provide bolts, anchors, inserts, and other miscellaneous steel or iron fastenings installed in concrete forms. Provide steel plates, channels, and angles for attaching work of other trades. Examine and check architectural, structural, mechanical and electrical drawings for number, type and location of such items. Provide 5" sleeves cast in concrete slabs to set vertical supports.
- E. Bolting: Make connections as indicated with bolts noted or required. Draw machine bolts up tight and upset threads to preclude loosening.
 - 1. If high strength steel bolts are used, the bolts and installation shall comply with the specifications for "Structural Joints Using ASTM A325 Bolts," as approved by the "Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation." Inspection of high strength bolts shall be the same as specified for welding here-in-before. All bolts shall be tightened by turn of the nut methods or load indicator washers only.
 - 2. Bolted Connections With Unfinished Bolts: Where bolted connections, other than finished or high strength bolts, are specified, they shall be made with unfinished bolts installed in punched holes having a diameter of 1/16" larger than the nominal bolt diameter.
 - 3. Welded Stud Bolts and Anchors: Shall be Nelson studs meeting ASTM A49 and automatically welded in the shop or field. Size and weld base of studs shall be as noted on the drawings. All stud welds shall be made in accordance with the Nelson Stud Welding Division and shall develop the full strength of the bolt.
- F. Detail of Connections: Contractor shall detail the Work so that all connections between members, unless otherwise shown, shall be made by the use of high strength bolts, unfinished bolts or welding as detailed. All connections shall, except as detailed otherwise, conform to the standards of the American Institute of Steel Construction. In case of conflict between said standards and the provisions of the drawings and specifications prepared by the Architect/Structural Engineer, those drawn by the Architect/Structural Engineer shall govern.
- G. Welding:
 - 1. Weld joints, unless otherwise indicated or specified, using shielded electric arc method. Use coated welding rods, not fluxed, of type recommended by manufacturer for use with parent metal. Use only certified welders for structural construction.
 - 2. Grinding: Grind all exposed welds to smooth flush joints.
 - 3. Permanently Concealed Welds: Nothing other than preparation for painting or galvanizing.
- H. Erection: The Contractor shall carefully plan the work of erecting the steel so that only the minimum of cutting and removal of undamaged material will be necessary. He shall provide temporary bracing and guys to plumb the steel work, shall temporarily bolt or clamp all field connections and maintain the structural steel work plumb, straight and true while the field connections are being done. Tolerances shall be limited to those set forth in the AISC "Code of Standard Practice." When the field connections are complete, he shall remove all temporary bracing.
- I. Obtain approval prior to site cutting or making adjustments not scheduled.
- J. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.

END OF SECTION

**SECTION 06 1000
CARPENTRY**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, tools services required to fully complete all "Carpentry Work," as is indicated on the drawings or specified herein including, but not limited to, the following described items:
- C. Laying out, cutting, fitting, erecting, securing all wood sheathing and lumber work on the new building and related products which are required by this project.
- D. Wood nailers, wood stripping, blocking, grounds and ledgers, trim, etc. Note: All backing for wall-hung equipment and furnishings, etc. shall be wood - steel stud or strap backing is not allowed.
- E. Furnish and install all rough hardware.
- F. Cutting work of carpentry required by other trades.
- G. Furnish and erect wood roof parapet caps.
- H. Furnishing and erecting wood studs, plates and other framing including wood roof parapets, caps, and mechanical equipment curbs.
- I. Furnishing and installing all plywood sheathing as per structural drawings.
- J. Furnish and install all required "Simpson" joist hangers and framing anchors as detailed.
- K. Furnish and install building wrap where required.
- L. Structural dimension lumber framing.
- M. Non-structural dimension lumber framing.
- N. Roofing nailers.
- O. Communications and electrical room mounting boards.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Setting anchors in concrete.
- B. Section 05 5000 - Metal Fabrications: Miscellaneous steel connectors and support angles for wood framing.
- C. Section 06 1753 - Shop-Fabricated Wood Trusses.
- D. Section 06 4000 - Prefinished Cabinets and Trim.
- E. Section 07 4616 - Aluminum Siding: Underlayment.
- F. Section 07 6200 - Flashing and Sheet Metal: Sill flashings.
- G. Section 10 2813 - Toilet Room Accessories: Backing.

1.03 REFERENCE STANDARDS

- A. ANSI A208.1 - American National Standard for Particleboard 2009.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2016a.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2015, with Editorial Revision (2016).
- D. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2013.
- E. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.

- F. ASTM D2898 - Standard Test Methods for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing 2010 (Reapproved 2017).
- G. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2016.
- H. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2017.
- I. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2016.
- J. AWPA U1 - Use Category System: User Specification for Treated Wood 2017.
- K. ICC-ES AC308 - Acceptance Criteria for Water-Resistive Barriers 2016, with Editorial Revision (2019).
- L. PS 1 - Structural Plywood 2009.
- M. PS 20 - American Softwood Lumber Standard 2015.
- N. RIS (GR) - Standard Specifications for Grades of California Redwood Lumber 2000.
- O. SPIB (GR) - Grading Rules 2014.
- P. WCLIB (GR) - Standard Grading Rules for West Coast Lumber No. 17 2004, and supplements.
- Q. WWPA G-5 - Western Lumber Grading Rules 2011.

1.04 SUBMITTALS

- A. Product Data: Provide technical data on materials specified in this section..
- B. Structural Composite Lumber: Submit manufacturer's published structural data including span tables, marked to indicate which sizes and grades are being used; if structural composite lumber is being substituted for dimension lumber or timbers, submit grading agency structural tables marked for comparison.
- C. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.05 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.

1.06 WARRANTY

- A. All products and equipment supplied under this Section shall be guaranteed for one (1) year from date of Substantial Completion of the building.
- B. Repairs or replacement shall be performed in a timely manner at no additional expense to the Owner.
- C. Furnish three (3) copies of written guarantee on form bound within Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
 - 1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
 - 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.

2.02 LUMBER / PLYWOOD

- A. Shall conform to the latest applicable standards as set forth by the West Coast Lumberman's Association or WWPAA.
- B. Markings: "Grade," "Trade Mark," and "Mill Identification Mark," of the association having jurisdiction over the species involved shall appear on each individual piece of standard dimension lumber.
- C. Plates on concrete or masonry shall be Pressure treated #2 or better hem-fir or, Redwood to meet 2009 I.B.C. Code. Standards - CCAC treatment, minimum 0.25 #/cu. ft. retention.
- D. Wood Sheathing
 - 1. Plywood meeting requirements of PS 1-95/ANSI A199.1.
 - a. Except where plywood is specially indicated on Drawings, APA performance rated waferboard, composite board, and oriented strand board (but not structural board) are accepted as equal to plywood, providing specified span ratings and other specified requirements for plywood are met.
 - 2. Every sheet of sheathing shall be stamped as follows:
 - a. Appropriate APA grade stamp identifying species and span rating.
 - b. Sheathing shall be stamped "Sized for Spacing."
 - c. Exposure 1 or exterior.
 - 3. Sheathing shall not exceed eighteen percent (18%) moisture content when fabricated nor more than nineteen percent (19%) when installed.
 - 4. Sheathing used for same purpose shall be of same thickness. In all cases, thickness specified is minimum required regardless of span rating.

2.03 MISCELLANEOUS PRODUCTS

- A. Nails, Bolts, Washers, and Other Rough Hardware.
 - 1. Nails shall conform to I.B.C. Section 2303.6 and 2304.9. Nails and nailing shall comply with Table 2304.9.1 of 2009 I.B.C. unless a higher standard is called for. Use common galvanized nails on exterior.
 - 2. Bolts shall conform to ASTM Standard A307 or ASTM A36. Nuts shall conform to A563, latest edition, grade "A."
 - 3. Screws shall conform to I.B.C. Sections 2304.9 and Table 2304.9.1
 - 4. Unistrut with miscellaneous clamps, bolts and nuts as indicated on drawings.
- B. Building Wrap.
 - 1. Dupont Tyvek Commercial Wrap.
 - 2. Pactiv Greenguard C500 Building Wrap.
 - 3. Dryline Commercial Grade Building Wrap.
 - 4. Soprema Air & Vapor Barrier
 - 5. Approved equal to those listed above.

2.04 CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood, or medium density fiberboard; 3/4 inch (19 mm) thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.05 QUALITY AND PROTECTION

- A. Moisture content shall be as follows:
 - 1. Structural members and boards shall not exceed nineteen percent (19%).
- B. Finish members and millwork shall not exceed twelve percent (12%).

PART 3 EXECUTION

3.01 PREPARATION

- A. Coordinate installation of rough carpentry members specified in other sections.

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. Fit all hardware accurately, apply securely and adjust carefully.
- D. Coordinate with other Sections to provide blocking necessary for their work.

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 unless otherwise specifically detailed.
- D. Use pressure-treated wood for wood plates or sills in contact with concrete or masonry.

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.

3.05 INSTALLATION OF CONSTRUCTION PANELS

- A. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches (610 mm) 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 MISCELLANEOUS PRODUCTS INSTALLATION

- A. All items shall be installed per approved submittals and manufacturers recommendations.
- B. All items shall be installed at locations shown and rigidly, straight, plumb and level to meet project requirements.

3.07 CLEANING

- A. Comply with requirements of Section 01 7413 - Cleaning Up
- 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 1753
SHOP-FABRICATED WOOD TRUSSES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Shop fabricated wood trusses for roof framing.
- B. Bridging, bracing, and anchorage.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Carpentry: Installation requirements for miscellaneous framing.
- B. Section 06 1000 - Carpentry: Material requirements for blocking, bridging, plates, and miscellaneous framing.

1.03 REFERENCE STANDARDS

- A. TPI 1 - National Design Standard for Metal-Plate-Connected Wood Truss Construction 2007 and errata.
- B. TPI BCSI 1 - Building Component Safety Information Booklet: The Guide to Good Practice for Handling, Installing & Bracing of Metal Plate Connected Wood Trusses 2011.
- C. TPI DSB-89 - Recommended Design Specification for Temporary Bracing of Metal Plate Connected Wood Trusses 1989.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Manufacturer's data sheets on plate connectors, bearing plates, and metal bracing components.
- C. Shop Drawings: Show truss configurations, sizes, spacing, size and type of plate connectors, cambers, framed openings, bearing and anchor details, and bridging and bracing.
 - 1. Include identification of engineering software used for design.
 - 2. Provide shop drawings stamped or sealed by design engineer.
 - 3. Submit design calculations.

1.05 QUALITY ASSURANCE

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle and erect trusses in accordance with TPI BCSI 1.
- B. Store trusses in vertical position resting on bearing ends.

PART 2 PRODUCTS

2.01 TRUSSES

- A. Wood Trusses: Designed and fabricated in accordance with TPI 1 and TPI DSB-89 to achieve structural requirements indicated.

2.02 MATERIALS

- A. Lumber:
 - 1. Moisture Content: Between 7 and 9 percent.
 - 2. Lumber fabricated from old growth timber is not permitted.
- B. Truss Bridging: Type, size and spacing recommended by truss manufacturer.

2.03 ACCESSORIES

- A. Wood Blocking, Bridging, Plates, and Miscellaneous Framing: As specified in Section 06 1000.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that supports and openings are ready to receive trusses.

3.02 ERECTION

- A. Install trusses in accordance with manufacturer's instructions and TPI DSB-89 and TPI BCSI 1; maintain a copy of each TPI document on site until installation is complete.
- B. Set members level and plumb, in correct position.
- C. Install permanent bridging and bracing.

END OF SECTION

**SECTION 06 4000
PREFINISHED CABINETS AND TRIM**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, material, services, equipment, transportation, etc. to complete the manufacture and installation of all factory-built plastic laminate surfaced cabinets as detailed on the drawings, listed in the casework list and specified herein, complete. Cabinet contractor to cooperate fully with the project superintendent of the building and is to notify him regarding coordination required to efficiently install all cabinet work. In addition, the following items shall be considered a part of this section.
- C. Furnish and install all prefinished cabinetry as detailed on the drawings.
- D. Coordinate all plumbing fixtures and appliances which are to be integrated with cabinets.
- E. Furnish and install all hardwood and softwood trim as detailed.
- F. All open shelving standards and brackets.
- G. Provide caulking at all cabinets, countertops and backsplashes to walls, typical.
- H. Clean-up and disposal as a result of this Work.
- I. Hardware.

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications
- B. Section 06 1000 - Carpentry: Support framing, grounds, and concealed blocking.
- C. Section 06 6116 - Solid Polymer Fabrications
- D. Section 08 7000 - Finish Hardware (Finish hardware not required for cabinets)
- E. Section 09 6500 - Resilient Flooring: Rubber Base.
- F. Section 12 3640 - Granite Countertops.

1.03 REFERENCE STANDARDS

- A. ANSI A135.4 - Basic Hardboard 2012 (R2020).
- B. ANSI A208.1 - American National Standard for Particleboard 2016.
- C. ANSI A208.2 - Medium Density Fiberboard (MDF) for Interior Applications 2016.
- D. AWI (QCP) - Quality Certification Program current edition at www.awiqcp.org.
- E. AWMAC (GIS) - Guarantee and Inspection Services Program Current Edition.
- F. BHMA A156.9 - American National Standard for Cabinet Hardware 2015.
- G. GSA CID A-A-1936 - Adhesive, Contact, Neoprene Rubber 1996a (Validated 2013).
- H. HPVA HP-1 - American National Standard for Hardwood and Decorative Plywood 2016.
- I. NEMA LD 3 - High-Pressure Decorative Laminates 2005.
- J. NHLA G-101 - Rules for the Measurement & Inspection of Hardwood & Cypress 2015.
- K. PS 1 - Structural Plywood 2009 (Revised 2019).
- L. PS 20 - American Softwood Lumber Standard 2020.
- M. WI (CCP) - Certified Compliance Program (CCP) Current Edition.
- N. WI (MCP) - Monitored Compliance Program (MCP) Current Edition.

1.04 SUBMITTALS

- A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories. Refer to Section 01 3300 - Submittals for general requirements.

- B. Product Data: Provide data for hardware accessories.
- C. Sample Submittal
 - 1. When required by the Architect, submit samples of cabinet constructed in accordance with the requirements of this Section and Sections 01 3300 - Submittals.
 - 2. Provide one complete set each of physical samples of proposed laminate and edge banding.
- D. Closeout submittal:
 - 1. Submit Closeout Documentation in compliance with Section 01 7700 - Project Closeout.
 - 2. Submit Warranties, Guarantees, and Bonds in compliance with Sections 01 7833 - Warranties and bonds and 01 7836 - Form of Guarantee.
- E.

1.05 QUALITY ASSURANCE

- A. General requirements: All materials and workmanship, as well as methods of construction and installation covered by this specification, shall be of the highest quality, techniques, and practices used in plastic laminated casework. Materials and installation shall comply with Sections 01 4500 - Quality Control Services and 01 6000 - Materials and Equipment.
- B. Additional requirements:
 - 1. All cabinets are to be furnished by one manufacturer. Continuity and uniformity in construction and design are essential. Exposed exterior vertical surfaces are finished with NEMA grade high pressure plastic laminate available in a select range of solid and woodgrain patterns. Maximum of five (5) different colors per project. Only one (1) color may be used on the face of individual cabinets. If woodgrain pattern is selected, woodgrain will be horizontal on top rail, and draw faces, woodgrain will be vertical on end panels, doors, and exposed backs. Exposed and semi-exposed interior surfaces are finished with thermo-fused melamine. **Colors to be selected from full range of manufacturers' options.**
 - 2. Edges of cabinet tops, bottoms, doors, shelves, partitions, and drawer parts are trimmed with 3mm PVC. **Colors to be selected from full range of manufacturers' options.**
 - 3. Hinged doors, drawers, and face panels shall be manufactured with a reveal overlay design with 1/8" margins between doors and drawers. Margins between doors and drawers and abutting cabinets shall be 5/8".
 - 4. Doors shall be capable of opening a full one hundred and seventy-six (176) degrees. Easy access to adjustable shelves and tote trays shall be maintained. Hinges which require cutting the edge-banding of the door will not be allowed.
 - 5. **"ALL WORK SHALL MEET OR EXCEED THE MINIMUM REQUIREMENTS OF THIS QUALITY SPECIFICATION."**

1.06 DELIVERY, STORAGE, AND HANDLING

- A. General Requirements: Delivery, Storage and Handling of Materials shall comply with Section 01 6000 - Materials and Equipment.
- B. Additional requirements of these sections shall comply with the following:
 - 1. Casework shall be properly packed and cared for as required so as to protect against damage in transit to the jobsite.
 - 2. At the job site, casework shall be stored in a secure location which will be heated as assigned by the General Contractor.
 - 3. Any damage to casework during installation will be properly repaired or replaced.

1.07 FIELD CONDITIONS

- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

1.08 WARRANTY

- A. Warranties and Guarantees shall comply with Sections 01 7833 - Warranties and Bonds and 01 7836 - Form of Guarantee.

- B. All cabinets and equipment supplied under this Section shall be guaranteed for one (1) year from date of Substantial Completion of the building.
- C. Repairs or replacement shall be performed in a timely manner at no additional expense to the Owner.
- D. Furnish three (3) copies of written guarantee on form bound within Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 CASEWORK

- A. Materials shall comply with Section 01 6000 - Materials and Equipment and the requirements of this section.
- B. MANUFACTURERS: The following are accepted manufacturers:
 - 1. Huetter Mill
4736 South 500 West
Murray, Utah 84123
(801) 263-9437 www.huettermill.com
 - 2. Glades Mill & Fixture
477 North 800 West
Cedar City, Utah 84721-4033
(435) 586-6810
 - 3. Johnson Brothers Mills
233 Basalt
Idaho Falls, ID 83402-3958
(800) 726-2656 www.jbros.com
 - 4. Riverwoods Mill Inc.
316 East 1400 South, Suite A1
St. George, Utah 84790
(435) 673-4145 www.riverwoodsmill.com
 - 5. Westmark Products Inc.
11721 Steele Street South
Tacoma, WA 98444
(800) 755-3470 www.westmarkproducts.com
 - 6. Casework USA by WB Manufacturing
507 E. Grant Street
Thorp, WI 54771
(800) 242-2303 www.wibenchmfg.com
 - 7. Mapleleaf Cabinets
3618 South 500 West
Salt Lake City, UT 84115
(801) 262-7741
 - 8. Artistic Mill
6195 South 380 West
Salt Lake City, UT 84107
(801) 262-8851

9. Cozzens Cabinets LLC
609 North 935 West
Cedar City, UT 84720
(435) 586-7618

10. Fine-Line Cabinet & Mill
412 North 600 West
Cedar City, UT 84721
(435) 586-4466

11. Substitutions

- a. Product Substitutions shall comply with Section 00 4325 - Product Substitutions.
- b. Each bidder represents that his bid is based upon the materials and equipment described in the bidding documents. No substitution will be considered unless written request has been submitted to the Architect for review at least seven (7) days prior to the date set for bid opening. Each such request shall include a complete description of the proposed substitute, drawings, cuts, models, performance and test data and any other data or information necessary for a complete evaluation. All accepted substitutions will be set forth in an addendum.
- c. The Architect reserves the right to require submission of a sample cabinet from those seeking approval as an accepted substitute. The cost for the sample cabinet will be the responsibility of the party seeking approval.

C. Component Construction

1. Toe Kicks

- a. Fixed cabinets are constructed of 3/4" exterior grade oriented strand board with 2 x 4 fir stringers. Bases are leveled and anchored to the floor in continuous lengths to ensure straight and true lines of casework. Rubber, vinyl, or other finished base shall be furnished and installed by others.

2. Case Body

a. Ends

- 1) Case ends shall be 3/4" thick melamine laminated to particle board with phenolic backer on concealed side. Exposed exterior cabinet ends shall be laminated with vertical grade high pressure plastic laminate. Exposed edge shall be edged with 3mm PVC edge-banding. Holes shall be drilled for adjustable shelf supports at 32 mm (1-1/4") centers.

b. Cabinet Top and Bottom

- 1) Base and tall cabinet tops and bottoms shall be 3/4" thick with melamine thermo-fused particle board and phenolic backer sheet on concealed side.
- 2) Wall cabinet tops and bottoms shall be 1" thick for all cabinets. Melamine thermo-fused to particle board both sides.
- 3) All edges shall be banded with 3mm PVC edge-banding.

c. Fixed and Adjustable Shelves

- 1) All shelves shall be 1" thick with melamine thermo-fused to 45# particle board both sides.
- 2) All exposed edges shall be banded with 3mm thick PVC.
- 3) All shelves to be adjustable on 1-1/2" centers.
(a) Tall cabinets to have fixed center shelf- Refer to details.
- 4) At all custodial rooms, the lowest three (3) shelves shall have a 1" high lip on the front to prevent chemicals or other items from rolling or sliding off.

d. Cabinet Backs

- 1) Cabinet backs shall be 1/4" thick pre-finished hardboard for use in cabinets with or without doors and shall be recessed into ends and sides.
- 2) Exposed backs shall be 3/4" thick with melamine thermo-fused to particle board on interior and high pressure plastic laminate on exterior surface.

3. Doors and Drawer Fronts

- a. Plastic Laminate Doors and Drawer Fronts
 - 1) Plastic laminate doors and drawer fronts shall be 3/4" thick for all hinged and sliding doors with vertical grade high pressure plastic laminate face and white cabinet liner on interior face. Particle board core to be 11/16" thick, forty-five (45) pound density.
- b. Stile and Rail Doors
 - 1) Stile and rail doors shall be a 3/4" door blank with a cutout to provide 3" stile width and 3" wide rail top and bottom. 1/4" thick plate glass is fitted to cutout and stopped with an white color removable vinyl extrusion.
- c. Doors and drawer fronts shall be edged with 3mm PVC edge-banding.
- d. Any required glazing shall be 1/4" tempered float glass.
4. Drawers
 - a. Drawer box sides, backs, and sub-fronts shall be 5/8" thick melamine thermo-fused to particle board. All edges shall be banded with 3mm PVC.
 - b. Drawer bottoms shall be 1/4" thick pre-finished melamine hardboard or particle board recessed into the sides, backs, and sub-front.
 - c. Paper storage drawers shall be fitted with a hood at back of paper retainage and shall have a 1/2" thick reinforced bottom.
 - d. Drawer fronts shall be mounted with adjusting mechanism to allow complete adjustability and alignment in the field.
 - e. Contractor shall have the option to use the 'metabox' style of drawers in lieu of wood.
5. Vertical and Horizontal Dividers
 - a. Shall be 1/4" thick tempered hardboard smooth both sides, or thermo-fused melamine over 3/4" particle board as required by cabinet construction requirements.
6. Joinery
 - a. All parts shall be accurately machined and fit for square and true.
 - b. Cabinet components shall be doweled into ends using ten (10) mm hardwood dowels 4" on center, securely glued, and fastened with 2" screws, where applicable.
 - c. Drawer bodies shall be box type construction with attached drawer fronts. Joints shall be securely fastened with hardwood dowels and glue.
- D. WOOD-BASED COMPONENTS
 1. Particle Board: Premium grade board of balanced construction with a density of forty-five (45) lbs. per cubic foot and moisture content of eight percent (8%) or less. Face screw holding shall be a minimum of three hundred twenty (320) lbs. withdrawal.
 2. Trim
 - a. Hardwood: Shall be AWI custom grade finish sanded Red Oak as detailed.
 - b. Softwood: Shall be 'Paint Grade' finish sanded pine as detailed.
 3. Masonite: 1/4" tempered Masonite with 1/8" perforations in standard pattern.
 4. Wood Dowels
 - a. Cabinet construction dowels shall be 8mm diameter x 30mm length multi grooved hardwood.
 - b. Drawer construction dowels shall be 6mm x 25mm length multi grooved hardwood.
- E. LAMINATE MATERIALS
 1. Manufacturers:
 - a. Formica Corporation; [____]: www.formica.com.
 - b. Panolam Industries International Inc\Nevamar; [____]: www.nevamar.com.
 - c. Wilsonart; [____]: www.wilsonart.com.
 2. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
 3. Provide specific types as follows:
 - a. Vertical Surfaces
 - 1) High pressure plastic laminate for exterior surfaces shall be NEMA vertical grade .030" thickness, satin finish. Colors are to be selected by architect from manufacturer's full range of color options.

- 2) Balancing sheet on inside of doors, drawer fronts and finished ends shall be high pressure cabinet liner matching cabinet interior color.
 - b. Thermo-Fused Melamine
 - 1) Melamine thermo-fused to a forty-five (45) lbs. density, or better, particle board substrate. Color shall be Mfrs. Std. Colors.
 - 2) White color melamine is standard for all cabinet interiors whether exposed or semi-exposed.
- F. ACCESSORIES
1. Adhesive: Type recommended by AWI/AWMAC to suit application.
 2. Edge-Banding
 - a. Edge-banding for cabinet body parts shall be applied with hot melt glue by automatic edge-banding equipment. Color shall be as selected by Architect from manufacturers full range of color options.
 - b. Edge-banding for door and drawer fronts shall be applied with hot melt glue by automatic edge-banding equipment. Edges and corners shall be rounded with a 3mm radius and scraped free from machining or chatter marks. Color shall be as selected by Architect from manufacturers full range of color options.
 3. Caulking: Dow-Corning, 999-A, white silicone sealant.
 - a. Acceptable Manufacturers
 - b. Chemcalk (Bostik)
 - c. Sika
 - d. Pecora
- G. HARDWARE
1. Adjustable Shelf Supports: Adjustable shelves shall be supported on adjustable shelf supports inserted in shelf holes drilled into the case end or partitions and adjustable on 1-1/2" centers. Supports shall be nylon, dual-pegged shelf securing clips (no exceptions).
 2. Drawer and Door Pulls: 5/16" x 4" (center to center) brushed chrome - no exceptions..
 3. Drawer Slides:
 - a. Shall be Accuride 7832C or Blum 430-E, 3/4 extension lever release type, 100 lbs. class for file drawers, drawers over 36" wide or 8" high. Provide Blum 230M class at all other drawer types.
 - b. Manufacturers:
 - 1) Accuride International, Inc; Light-Duty Drawer Slides: www accuride.com/#sle.
 - 2) Knap & Vogt Manufacturing Company; Light-Duty Drawer Slides: www.knapandvogt.com/#sle.
 4. Hinges:
 - a. Shall be "Blum," 170 series, self closing "clip" type hinges. Opening range shall be minimum of one hundred seventy (170°) degrees. Doors up to 36" in height shall have two (2) hinges per door. Doors from 37" to 60" shall have three (3) hinges per door. Doors from 61" to 80" shall have four (4) hinges per door.
 - b. Manufacturers:
 - 1) Blum, Inc; []: www.blum.com/#sle.
 - 2) Knap & Vogt Manufacturing Company; []: www.knapandvogt.com.
 5. Locks:
 - a. Locks for drawers and 3/4" hinged doors shall be National Lock #8053 disc tumbler. Locks shall be keyed alike within rooms. Except at heat pump cabinets. Heat pump cabinets shall be keyed alike and separate from classroom locks.
 6. All "File" type drawers to receive specified "Pend-A-Flex" rods.
 7. Shelving Brackets and Standards: Provide Knap and Vogt No. 182 extra heavy duty double slotted vertical standards and No. 82 extra heavy- duty double slotted brackets where shown on the drawings. Finish shall be white epoxy paint. (Screw attach shelves to brackets, typ.)
 8. Countertop Grommets: 1-1/2" Plastic grommets in thru opening at each computer Station / knee space.

9. Countertop Support Brackets: Provide A&M Hardware standard workstation and countertop brackets where shown on the drawings.

H. FABRICATION

1. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
2. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
3. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
4. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs. (Locate counter butt joints minimum 600 mm from sink cut-outs.)

PART 3 EXECUTION

3.01 EXAMINATION

- A. See floor plans, elevations and details for locations of cabinets.
- B. Verify adequacy of backing and support framing.
- C. Verify location and sizes of utility rough-in associated with work of this section.

3.02 PREPARATIONS

- A. Verify field conditions as suitable for installation. Coordinate with other disciplines such as Drywall Contractor, Painting Contractor and others as needed for any required corrections prior to installation.

3.03 INSTALLATION

- A. General: Comply with manufacturer printed instructions, Section 01 60 00, "Materials and Equipment" and the standards listed in 1.3 and 1.5 of this Section, except where more stringent requirements are shown or specified.
- B. Casework shall be installed level and plumb and securely anchored in place. Doors, drawers, and other moving parts shall be adjusted for proper alignment and function. Scribes and fillers shall be fitted to adjoining surfaces.
- C. Permanent cabinets and casework shall be anchored by means of grounds provided by others and shall be erected plumb and to a line.
- D. Caulking
 1. Joint Cleaning: Apply sealant to clean, dry surface free from grease, oil, wax or other foreign matter tending to destroy or impair adhesion. Clean and prime in accordance with sealant manufacturer's instructions if required.
 2. Application: Apply sealants strictly in accordance with manufacturer's instructions and supervision, by manufacturer approved applicator. Provide technical field assistance by manufacturers to ensure proper mixing of sealants, cleaning of surfaces and application of materials.
 3. Cleaning and Protection: Carefully protect adjoining surfaces from staining. Immediately remove any material on surfaces not to receive sealant and restore finish as required. Where cleaning and restoration is not acceptable, remove affected work and provide new work conforming to applicable requirements as directed at Contractor's expense.
 4. Fill joints partially with closed cell expanded backing using only compatible materials until joint width does not exceed joint depth. Apply sealant under sufficient pressure to completely fill voids. Finish exposed joints smooth, flush with surface or recessed as shown.

3.04 ADJUSTING

- A. Adjust moving or operating parts to function smoothly and correctly.

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3.05 CLEANING

- A. Comply with Section 01 7413 - Cleaning Up except for more stringent requirements of the drawings or specifications
- B. All casework shall be broom cleaned. All debris, including packaging and scraps, shall be removed to the appropriate job waste dump.
- C. This Contractor shall clean all interiors and exteriors of the cabinets repairing all scratches, buffs, etc., using factory-approved cleaning and polishing solutions.

END OF SECTION

**SECTION 06 6116
SOLID POLYMER FABRICATIONS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, material, services, equipment, transportation, etc. to complete the manufacture and installation of all Solid Polymer Fabrications as detailed on the drawings or specified herein, complete.
- C. Furnish and install all solid polymer fabrications as detailed on the drawings.
 - 1. Window sills.
- D. Clean-up and disposal as a result of this Work.

1.02 RELATED WORK

- A. Section 06 4000 - Prefinished Cabinets and Trim.

1.03 GENERAL

- A. All materials and workmanship, as well as methods of construction covered by this Specification, shall be of the highest quality, techniques, and practices used in this kind of work.
- B. Substitutions: Each bidder represents that his bid is based upon the materials and equipment described in the bidding documents. No substitution will be considered unless written request has been submitted to the Architect for review at least seven (7) days prior to the date set for bid opening. Each such request shall include a complete description of the proposed substitute, drawings, cuts, models, performance and test data and any other data or information necessary for a complete evaluation. All accepted substitutions will be set forth in addenda.

1.04 SHOP DRAWINGS AND SUBMITTALS

- A. Before fabrication, furnish shop drawings showing layout, rough in for fixtures and any modified construction or extra and special fixtures and equipment.
- B. Shop drawings shall be supplied by the solid polymer fabricator, and shall include all necessary scale and full size details for finished exposed, fabricated items. Where field dimensions may cause fitting difficulties, same shall be field checked and ascertained by the solid polymer fabricator and General Contractor.
- C. Provide a complete set of sample colors to the Architect with current pricing for each color.

1.05 STORAGE AND HANDLING

- A. Materials shall be properly packed and cared for as required so as to protect against damage in transit to the jobsite.
- B. At the jobsite, materials shall be stored in a secure location which will be heated as assigned by the Contractor.
- C. Any damage during installation will be properly repaired or replaced.
- D. Deliver all solid polymer fabrications to site ready for installation. Deliver fabricated work in protective packing so as to minimize any potential damage to work prior to installation. Do not deliver any materials to site until areas are ready to receive them for installation. Store all materials indoors in a dry area away from extreme temperatures. Store flat materials in vertical racks with edges protected or flat on padded pallets. Coordinate storage of installation materials and equipment on site with General Contractor prior to delivery. Handle all solid polymer fabrication materials in such a way as to prevent physical damage or staining following installation and for the duration of the project. Upon delivery of solid polymer fabrication to the site, all containers shall be opened by the General Contractor and inspected for damage. Damaged materials shall be removed from the site and replace with undamaged materials by the solid polymer fabricator, at no cost to the Owner.

1.06 QUALITY CONTROL

- A. Quality Assurance for Fabrication and Installation of Solid Polymer Fabrication Materials
 - 1. Fabricator qualifications: All work of this Section shall be fabricated and installed by a fabrication professional who has been accredited by the manufacturer of the solid polymer materials. The accredited fabrication professional shall be skilled in the knowledge and ability required to provide work in accordance with the manufacturer's "Fabrication and Installation Manual". The accredited fabrication professional shall have a minimum of two (2) years of solid polymer fabrication experience and have completed a minimum of two (2) solid polymer fabrication projects of similar scope and size to the solid polymer fabrication and installation work of this project. The accredited fabrication professional shall have complete and undivided responsibility for the solid polymer fabrication and installation work of this project. Written proof of accreditation should be available upon request.
 - 2. Source Quality Control: Obtain and provide materials for all solid polymer fabrication from a single manufacturer of solid polymer materials with not less than five (5) years of successful experience in supplying principal materials for solid polymer fabrication installations. Provide secondary and/or alternate materials only as recommended by the manufacturer of the primary solid polymer materials.
 - 3. Pre-installation Conference: Approximately one (1) week prior to the scheduled commencement of the solid polymer fabrication installation, a meeting shall be held at the project site with the accredited fabrication professional, the General Contractor and all other applicable trade representatives, to coordinate the solid polymer fabrication work.
 - 4. Applicable Standards: American National Standards Institute (ANSI). American Society of Testing Materials (ASTM). National Electrical Manufacturer's Association (NEMA).
 - 5. Allowable Tolerances.
 - a. Variation in component size: plus or minus 1/8" (3mm)
 - b. Location of openings: plus or minus 1/8" (3mm) from location indicated.

1.07 MEASUREMENTS

- A. Verify all casework dimensions by taking field measurements; proper fit and attachment of all parts is required.

1.08 GUARANTEE

- A. All work supplied under this Section shall be guaranteed for one (1) year from date of Substantial Completion of the building. Provide manufacturer's warranty on materials.
 - 1. Warranty for Solid Polymer Fabrication and Installation Work:
 - a. Provide manufacturer's standard ten (10) year limited warranty. The manufacturer shall warrant that the materials provided under this Section shall not develop visible defects or otherwise fail due to manufacturing defects within a period of ten (10) years from the date of Substantial Completion.
- B. Repairs or replacement shall be performed in a timely manner at no additional expense to the Owner.
- C. Guarantee shall be on form bound within Section 01 7836 - Form of Guarantee.

PART 2 - PRODUCTS

2.01 GENERAL SOLID POLYMER FABRICATIONS

- A. Summary of the Solid Polymer Fabrications Work
 - 1. Window sills
- B. Solid Polymer Fabrication Materials
 - 1. Acceptable Products:
 - a. Corian, Dupont Corp.
 - b. Surell, Formica Corp.
 - c. Gibraltar, Wilsonart International
 - d. Hanex, Hanwha L&C
 - e. Note that all solid polymer fabrications shall be from one supplier.

2. Material: Cast, mineral-filled, homogeneous, non-porous, decorative polymer alloy, composed of polyester and acrylic components.
3. Finish: Surface finish shall be [manufacturer's standard matte finish, gloss level 15-20, for patterns, when measured in accordance with NEMA LD3-3.15 (60 degree Gardner).]
- C. Solid Polymer Fabrications
 1. Window Sills: 1/2" thick to size, shape and tolerances and with edge details as shown on the drawings. Provide with inconspicuous joints using manufacturers' structural adhesive. Color shall be a premium color (Price Group "D" or equivalent), as selected by the Architect.
- D. Accessory Products
 1. Sealants: Sealants shall be one hundred percent (100%) silicone and shall be matched to sheet color unless otherwise noted.
 2. Adhesives
 - a. Flexible adhesive shall be one hundred percent (100%) silicone and shall be matched to Corian sheet color.
 - b. Rigid structural adhesive shall be seam adhesive as recommended by Dupont Corian.
 3. Polishing Pad: The following are polishing pads that will provide a finish similar to the manufacturer's standard matte finish. The following pad is recommended for commercial fabrication use; it is not FDA approved, but holds up considerably better during the final finishing process. 3M ScotchBrite #7447 (maroon) for commercial fabrication and final finishing.
- E. Preparation of Solid Polymer Installations
 1. Observe all recommended and required safety precautions including, but not limited to, eye protection, hearing protection, skin protection and adequate ventilation.
 2. Maintain clean work surfaces during seaming and other joint work.
 3. Fabricate and install work at temperatures above sixty-five degrees (65°) F.
- F. Fabrication of Solid Polymer Materials
 1. Fabrication shall be performed by an accredited Corian fabricator, accredited by the manufacturer, in accordance with manufacturer's recommendations and reference manual.
 2. Shop fabricate components: to greatest extent practicable to sizes and shapes indicated, in accordance with approved shop drawings.
 3. Special techniques: Comply with the manufacturer's recommendations for the use of specific types of stationary equipment and stationary tools. Site fabrication and finishing processes shall be in accordance with the manufacturer's recommendations for working with the solid polymer fabrication materials.
 4. Form seams between components, unless otherwise indicated, using solid polymer manufacturer's standard structural adhesive. Adhesive shall be color coordinated to match solid polymer material color and shall form inconspicuous seams. Seams in the long dimension shall not be permitted in any applications of less than 36" in width.

PART 3 - EXECUTION

3.01 INSTALLATION

- A. See floor plans, and details for locations of all work.
- B. Window sills shall be fit and scribed to walls and other surfaces. Ship pre-made pieces with sufficient length to allow scribing in the field. No caulked joints/edges over 1/4" will be accepted.

3.02 INSTALLATION OF SOLID POLYMER MATERIALS

- A. Prepare substrate plane, plumb and level, secure in place with all fasteners set flush. Shim supporting structure as required to provide an acceptable surface for attaching finish materials.
 1. Install components plane, plumb and level, in accordance with approved shop drawings and product data.

2. Pre-fit finish material in place. Scribe material as required to provide proper fit with adjacent materials.
3. Provide additional support for material seams in both horizontal and vertical location. Separation/release paper shall be provided between all supports and seams to prevent direct adhering of finish material to substrate.
4. Form field joints using manufacturer's recommended structural adhesive, with inconspicuous joints in finished work. All joints shall be solid and fitted flush to adjacent piece.
5. Prior to installing solid polymer fabrication, make sure that substrate is clean and dry. Place silicone "dabs" on substrate in accordance with manufacturer's recommendations.
6. Keep components and hands clean during installation. Remove adhesives, sealants and other stains from the Work as they occur.
7. During installation, protect surfaces of solid polymer fabrications from drainage until all components have been installed.

3.03 PROTECTION OF SOLID POLYMER FABRICATIONS

- A. After fabrication and installation, protect surfaces of solid polymer fabrications from damage until accepted by the General Contractor. Replace any damaged material prior to acceptance.

3.04 CLEANING OF SOLID POLYMER FABRICATIONS

- A. General: All work areas shall be broom cleaned. All debris, including packaging and scraps, shall be removed to the appropriate job waste dump.
- B. After installation, all surfaces shall be cleaned to remove contaminants. After cleaning, all work shall be protected against damage until it is accepted by the General Contractor. Thereafter, it shall be the responsibility of the General Contractor to maintain protection and provide final cleaning.

END OF SECTION 06 6116

**SECTION 07 1000
MEMBRANE WATERPROOFING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Waterproofing on masonry and/or concrete walls of building where indicated. Waterproofing shall continue over top and down side of footing and be terminated in a manner as approved by the manufacturer.
 - 1. All walls that retain earth below grade. Refer to Grading Plans, Wall Sections and Details.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete substrate.
- B. Section 07 9000 - Caulking and Sealants

1.03 REFERENCE STANDARDS

- A. ASTM C836/C836M - Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course 2015.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension 2016.
- C. ASTM D570 - Standard Test Method for Water Absorption of Plastics 1998 (Reapproved 2010).
- D. ASTM D624 - Standard Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers 2000 (Reapproved 2012).
- E. ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact 2014.
- F. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness 2015.
- G. NRCA ML104 - The NRCA Roofing and Waterproofing Manual Fifth Edition, with interim updates.

1.04 SUBMITTALS

- A. Submit in accordance with Sections 01 3300 - Submittals.
- B. Product Data: Provide data for membrane.
- C. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- D. Manufacturer's Installation Instructions: Indicate special procedures.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with NRCA Roofing and Waterproofing Manual for sheet membrane waterproofing system.
- B. Membrane Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- C. Installer Qualifications: Company specializing in performing the work of this section with minimum three years experience.

1.06 WARRANTY

- A. Guarantee that work specified herein will be free from defects of materials and workmanship for five (5) years from the date of Substantial Completion.

PART 2 PRODUCTS

2.01 MEMBRANE MATERIALS

- A. Composite Laminate Membrane: Comprised of fifty-six (56) mils of rubberized asphalt and four (4) mils of cross laminated polyethylene film; sixty (60) mils (15 mm) total thickness.

1. Sheet Width: 36" (.9m), minimum.

2. Physical Properties:

PROPERTY	VALUE	TEST METHOD
Color	Dark gray-black	
Pliability (180 degree bend over 1" mandrell at 25 degree F (32 degree C)	Unaffected	ASTM D 146
Tensile strength - membrane (psi)	5000 minimum	ASTM D 412(Die C) mod.
Elongation - ultimate failure of rubberized asphalt (%). Cycling over crack at -25 degrees F (-32 degrees C)	No effect	ASTM D 412(Die D) mod.
Cycling over 1" joint at -25 degree F (-32 degree C)	No effect - 1000 cycles	See "(1)" below
Peel strength	9.0 (lb./in.)	ASTM D903 (mod.)
Puncture resistance - bitutene membrane (lb.) (stretched by blunt object)	50 minimum	ASTM E 154
Resistance to hydrostatic head (ft. of water)	200 minimum	ASTM D 5385
Permeance - perms (grains/sq. ft.)	0.05 perms maximum	ASTM E 96 section 12 - water method
Water absorption	0.05 perms maximum	ASTM D 570

- B. Seaming Materials: As recommended by membrane manufacturer.
- C. Membrane Sealant: As recommended by membrane manufacturer.
- D. Termination Bars: Aluminum; compatible with membrane and adhesives.
- E. Surface Conditioner: [] type, compatible with membrane.
- F. Adhesives: As recommended by membrane manufacturer.
- G. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

2.02 ACCEPTED MANUFACTURERES

- A. Carlisle Coatings and Waterproofing: www.carlisle-ccw.com
- B. Grace Construction Products: www.graceconstruction.com
- C. Polycoat Products www.polycoatusa.com
- D. Polyguard Products, Inc.: www.polyguardproducts.com
- E. Soprema: www.soprema.us <<http://www.soprema.us>>
- F. TAMKO Building Products: www.tamko.com <<http://www.tamko.com>>

G. TENCAT Nicolon/Mirafi: www.tencate.com

H. W. R. Meadows Sealtight "MEL-ROL": www.wrmeadows.com

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions are acceptable prior to starting this work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. Verify items that penetrate surfaces to receive waterproofing are securely installed.

3.02 PREPARATION

- A. General: All concrete masonry shall be cured a minimum of seven (7) days and be dry before application of the Bituthene Waterproofing System.
- B. Protect adjacent surfaces from damage not designated to receive waterproofing.
- C. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- D. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
 - 1. Prior to application of the Bituthene Waterproof System, substrates shall be inspected and repaired as required to provide proper surfaces to receive waterproofing. All surfaces shall be free of voids, spalled areas, loose aggregate and sharp protrusions with no coarse aggregate visible. Remove all contaminants such as grease, oil, etc., from the exposed surface. Clean surface (broom, vacuum cleaner or compressed air) to remove dust, dirt, loose stones and debris. Repair concrete masonry in the following manner:
 - 2. Bugholes over 1/2" (13mm) in length and 1/4" (6mm) deep shall be plugged with concrete and finished flush with surrounding surfaces.
 - 3. Fins shall be ground smooth.
 - 4. Scaling shall be removed to sound, unaffected concrete and the exposed area repaired.
 - 5. Irregular construction joints shall be corrected by feathering the repair material or by grinding. Use repair materials that are approved by waterproofing manufacturer.

3.03 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials in manufacturer's original, unopened packaging with all labels intact.
- B. Storage
 - 1. Pallets of membrane shall not be double-stacked on the jobsite. Provide cover on top and all sides, allowing for adequate ventilation.
 - 2. Primer, mastic, protection board adhesive and liquid membrane should be stored in a dry area away from high heat, flames or sparks.
 - 3. Store protection board flat and off the ground, preferably on a wood platform. Provide tarpaulin cover on top and all sides.
 - 4. Store only as much material at point of use as required for each day's work.
- C. Handling
 - 1. Handle all materials in a manner to prevent damage of any kind. Damaged material shall be removed from the site and replaced with new specified materials.
 - 2. Bituthene products must be handled properly. B 2 Primer, Bituthene mastic and Bituthene liquid membrane Are Harmful or flammable. For these the best available information on safe handling, storage, personal protection, health and environmental considerations have been gathered. This information is available on request. All users should acquaint themselves with this information. Carefully read detailed precaution statements on product labels before use or contact the nearest manufacturer representative.

3.04 INSTALLATION - MEMBRANE

- A. Foundation Walls and Vertical Surfaces
 - 1. General: The membrane, when in place, must withstand a minimum static ground water pressure of 150' (45 m).

2. Priming: Application of primer shall be limited to what can be covered with Bituthene Waterproofing Membrane in a given work day. Primed areas not covered by membrane during the work day will be reprimed. Apply primer by spray, roller or brush at a rate of three hundred (300) sq. ft. per gallon. Primer shall be applied to a clean, dry, frost-free and dust-free surface. Sufficient primer must be used on the dry surface to condition it to a dust-free state suitable for the application of Bituthene Waterproofing Membranes. Coverage of primer will vary due to the texture and porosity of the surface to receive the primer.
3. Membrane Installation: Apply Bituthene Waterproofing Membrane vertically in sections of 8' in length or less. On higher walls, apply two or more sections with the upper overlapping the lower by at least 2-1/2" (64 mm). Press all membrane in place with heavy hand pressure or rollers during application. Typical at all foundation wall conditions. Membrane shall lap over the top of and down the face of footing a minimum of 6", typical.
4. Sealing Edges: Bituthene Waterproofing Membrane shall be applied over the edge of the slab or over the top of the foundation or parapet wall. If the membranes are terminated on the vertical surface, a reglet or counterflashing may be used or the membrane may be terminated directly on the vertical surface by pressing very firmly to the wall. Press edges with a metal or hardwood tool such as a hammer or knife handle. Apply a troweled bead of Bituthene mastic to all vertical and horizontal terminations.
5. Sealing Seams: All edges and end seams must be overlapped at least 2-1/2" (64 mm). Apply succeeding sheets with a minimum 2-1/2" (64 mm) overlap and stagger end laps. Roll or press the entire membrane firmly. The edges of the patch shall be sealed with a troweling of Bituthene mastic. Laps within 12" (300 mm) of all corners shall be sealed with at troweling of Bituthene mastic.
6. Corner Forming: Outside corners must be free of sharp edges, inside corners should receive a fillet formed with Bituthene Liquid Membrane, latex modified cement mortar (such as Daraweld C mixed with cement mortar) or epoxy mortar. Do not use fiber or wood cants. One of two methods may be used for treating corners:
 - a. Apply Bituthene Liquid Membrane 6" (150 mm) in each direction from the corner and form a fillet with a minimum 3/4" (19 mm) face.
 - b. Install an 11" (280 mm) minimum strip of Bituthene membrane centered on the corner. Install Bituthene Membrane over the treated inside and outside corners.
7. Protection of Membrane: Furnished and installed by this Section; protection board as recommended by manufacturer.

3.05 FIELD QUALITY CONTROL

- A. Upon completion of horizontal membrane installation, dam installation area in preparation for flood testing.
- B. Flood to minimum depth of 1 inch (25 mm) with clean water, and after 48 hours inspect for leaks.
- C. If leaking is found, remove water, repair leaking areas with new waterproofing materials as directed by Architect; repeat flood test, and repair damage to building.
- D. When area is proven watertight, drain water and remove dam.
- E. Failures: The following types of failures will be adjudged as defective work and will be required to be corrected.
 1. Leakage.
 2. Delamination of membrane.

END OF SECTION

**SECTION 07 1900
WATER REPELLANT/ANTI-GRAFFITI SEALER**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. The Work covered by this Section includes furnishing all labor and materials and performing all operations in connection with the application of a clear, penetrating water repellant and anti-graffiti sealer to the following:
 - 1. Penetrating Water Repellant Sealer: New exterior and interior masonry veneer wall surfaces.
 - 2. Masonry veneer mock-up panels shall also require application of sealer, coordinate with Section 04 2001.
 - 3. Anti-Graffiti Sealer: New exterior masonry veneer walls from finish grade to +9'-4" above finish grade. Refer to exterior elevations.
 - 4. All exposed masonry veneer and masonry walls to be power washed prior to sealing.

1.02 RELATED WORK

- A. Section 03 3000 - Cast-In-Place Concrete
- B. Section 04 2000 - Unit Masonry
- C. Section 04 2001 - Masonry Veneer
- D. Section 07 9000 - Sealants and Caulking

1.03 REFERENCES

- A. ASTM D 2369-92 - Test Methods for Volatile Content of Coatings.
 - 1. ASTM D 3960-93 - Practice for Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
 - 2. Federal Specification SS-W-110C - Water Repellent, Colorless Silicon, Resin Base.
 - 3. ASTM D 5095 - Standard Test Method for Determination of the Nonvolatile Content in Silanes, Siloxanes, and Silane-Siloxane Blends Used in Masonry Water Repellent Treatments; 1991 (Reapproved 2007).
 - 4. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com <<http://www.paintinfo.com>>.
 - 5. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; 2004.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01 3300 - Submittals.
- B. Product Data: Submit manufacturer's product data sheets on all products to be used for the Work. Submit description for protection of surrounding areas and non-masonry surfaces, surface preparation, application, and final cleaning.
- C. Applicator Qualifications: Submit qualifications of applicator.
- D. Certification stating applicator is experienced in the application of the specified products.
- E. List of recently completed water repellent projects, including project name and location, names of owner and architect, and description of products used, substrates, applicable local environmental regulations, and application procedures.
- F. Environmental Regulations: Submit applicable local environmental regulations.
 - 1. VOC Certification: Submit certification that water repellents furnished comply with regulations controlling use of volatile organic compounds (VOC).

1.05 QUALITY ASSURANCE

- A. Applicator Qualifications
 - 1. Experienced in the application of the specified products (minimum of two years).

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2. Employs persons trained for the application of the specified products.
- B. Pre-Application Meeting: Convene a pre-application meeting two (2) weeks before the start of application of water repellents. Require attendance of parties directly affecting work of this Section, including the Contractor, Architect, applicator, and water repellent and anti-graffiti sealer representative. Review environmental regulations, test panel procedures. Protection of surrounding areas, surface preparation, application, field quality control, final cleaning, and coordination with other work.

1.06 ENVIRONMENTAL REGULATIONS

- A. Comply with applicable federal, state, and local environmental regulations.

1.07 TEST PANELS

- A. Only after cleaning of test panel area by the contractor, following substrate manufacture's guidelines and recommended products for cleaning, should any testing be done.
- B. Before full-scale application, review manufacturer's product data sheets to determine the suitability of each product for the specific surfaces. Apply water repellent to test panels to determine coverage rates, compatibility, effectiveness, surface preparation, application procedures, and desired results.
- C. Apply water repellents to test panels in accordance with manufacturer's written instruction. Allow forty-eight (48) hours or until test panels are thoroughly dry before evaluating final appearance and results. Do not begin full-scale application until test panels are inspected and approved by the Architect and the manufacturer.
- D. Test Panel Requirements: Apply products to sample panels constructed for Section 04 4001 - Masonry Veneer.
- E. Retain and protect test panels approved by the Architect in undisturbed condition during the Work of this Section, to be used as a standard for judging the water repellent work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.
- B. Storage and Handling: Store containers upright in a cool, dry, well ventilated place, out of the sun. Store away from all other chemicals and potential sources of contamination. Keep lights, fire, sparks, and heat away from containers. Do not drop containers or slide across sharp objects. Keep containers tightly closed when not in use. Store and handle materials in accordance with manufacturer's written instructions.

1.09 PROJECT CONDITIONS

- A. Temperature Limitations.
 1. Do not apply at surface and air temperatures below forty degrees (40°)F or above ninety-five degrees (95°)F, unless otherwise indicated by manufacturer's written instructions.
 2. Do not apply when surface and air temperatures are not expected to remain above forty degrees (40°)F for a minimum of eight (8) hours after application, unless otherwise indicated by manufacturer's written instruction.
- B. Do not apply under windy conditions such that water repellent may be blown to surfaces not intended to receive it.
- C. Do not apply to frozen substrate. Allow adequate time for substrate to thaw, if freezing conditions exist before application.
- D. Do not apply earlier than twenty-four (24) hours after rain or if rain is predicted for a period of eight (8) hours after application, unless otherwise indicated by manufacturer's written instructions.

1.10 WARRANTY

- A. Manufacturer shall warrant respective products applied in accordance with manufacturer's specifications for a period of five (5) years from date of Substantial Completion, against water intrusion due to material failure. When notified of such conditions, in writing, by the Owner, the

manufacturer shall provide materials, and the applicator shall provide the labor to correct said deficiencies promptly and without inconvenience or cost to the Owner.

PART 2 - PRODUCTS

2.01 WATER REPELLENT AND GRAFFITI SEALER

- A. Prosoco Blok-Guard & Graffiti Control Ultra, 2-Coat Application on all interior and exterior masonry veneer walls, interior color, honed masonry walls and exterior precast concrete elements.
- B. Other manufacturers may bid as proposed alternate. (See Section 00 4325 - Product Substitutions.)

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify by examination that concrete surfaces are acceptable to receive the specified water repellents and graffiti sealers. Notify the Architect if surfaces are not acceptable to receive the specified products.

3.02 PROTECTION

- A. Protect surrounding areas, landscaping, building occupants, pedestrians, vehicles, and non-masonry surfaces during the Work from contact with water repellents, graffiti sealers, concrete cleaners if used, residues, rinse water, fumes, wastes, and effluents in accordance with manufacturer's written instructions.
- B. Apply water repellents and graffiti sealers before installation of windows.
- C. Divert and protect pedestrian and auto traffic.

3.03 SURFACE PREPARATION

- A. Clean all dirt, dust, oil, grease, and other contaminants from surfaces that interfere with penetration or performance of water repellents. Use appropriate concrete cleaners approved by the water repellent manufacturer where necessary. Whenever possible, use cleaning materials manufactured by water repellent manufacturer to insure compatibility. Rinse thoroughly using low pressure water spray to remove cleaner residues. (Consult tech data guides for all products.)
- B. Repair, patch, and fill all cracks, voids, defects, and damaged areas in surfaces as approved by the Architect. Allow repair materials to cure completely before application of water repellents.
- C. Seal all open joints.

3.04 APPLICATION OF WATER REPELLENTS

- A. Records: The Contractor shall maintain a record of the quantity of material used and the areas treated for each application to verify that the minimum required coverage rate has been achieved. The format of such record shall be agreed with the Owner and kept up to date and available for the Owner's inspection throughout the course of the work.
- B. Follow manufacturer's recommendations for surface preparation and coverage rates.
- C. Shall be applied to entire exterior face of all exterior exposed colored concrete tilt-up panels and masonry walls.

3.05 APPLICATION OF GRAFFITI SHIELD

- A. Follow manufacturer's recommendations for surface preparation, application, and coverage rates.
- B. Graffiti Sealer shall be applied from finish grade up to 9'-4" above grade or nearest reveal strip.

3.06 FIELD QUALITY CONTROL

- A. Inspection: Inspect the water repellent work with the Contractor, Architect, applicator, and product representative, and compare with test panel results approved by the Architect. Determine if the substrates are suitably protected by the water repellents, by final testing with rilem tube test. (No Exceptions.)

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- B. Manufacturer's Field Services: Provide the service of a manufacturer's authorized field representative to verify specified products are used, and protection, surface preparation, and application of water repellents are in accordance with the manufacturer's written instructions and the test panel results approved by the Architect.

3.07 FINAL CLEANING

- A. Clean site of all unused water repellents, graffiti sealers, residues, rinse water, wastes, and effluents in accordance with environmental regulations.
- B. Remove and dispose of all materials used to protect surrounding areas and non-masonry surfaces, following completion of the Work of this Section.
- C. Repair, restore, or replace to the satisfaction of the Architect, all materials, landscaping, and non-masonry surfaces damaged by exposure to water repellents and/or graffiti sealers.

END OF SECTION 07 19 00

**SECTION 07 2000
BUILDING INSULATION**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawing and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. This Contractor shall provide all labor, materials, transportation, equipment, scaffolding and services necessary to execute and complete all items of building insulation as shown on the drawings or specified hereinafter, including all incidental items to effect a finished and completed job:
 - 1. Faced fiberglass batt insulation at vertical and horizontal soffit areas of building. Surface facing material to be Class “A” rated.
 - 2. Faced fiberglass batt insulation installed vertically on wall between finished ceilings and roof deck where shown on drawings. Surface facing material to be Class “A” rated.
 - 3. Faced fiberglass batt insulation installed vertically between studs on walls between finished floor and finished ceiling. Surface facing material to be Class “A” rated.
 - 4. Unfaced “acoustical” fiberglass insulation installed as shown on the drawings.
 - a. Within “sound” rated partitions.
 - 5. 2" rigid fiberglass insulation at all exterior wall spaces separating masonry veneer and/or exterior wall sheathing as shown on the drawings.
 - 6. 2" rigid fiberglass insulation at underslab foundation walls as shown on drawings.
 - 7. Cavity wall insulation.

1.02 RELATED REQUIREMENTS

- A. Section 04 2001 - Masonry Veneer
- B. Section 06 1000 - Carpentry: Supporting construction for batt insulation.
- C. Section 07 5400 - Thermoplastic Membrane Roofing: Insulation specified as part of roofing system.
- D. Section 09 2000 - Gypsum Board Assemblies

1.03 REFERENCE STANDARDS

- A. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus 2017.
- B. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation 2021.
- C. ASTM C553 - Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications 2013.
- D. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation 2017a.
- E. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation 2014.
- F. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board 2017.
- G. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2021a.
- H. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials 2016.
- I. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace At 750 Degrees C 2016a.
- J. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components 2012.

1.04 SUBMITTALS

- A. Product Data: Provide data on product characteristics, performance criteria, and product limitations.
- B. Manufacturer's Data: Manufacturer's specifications and installation instructions for all insulation materials listed in this specification.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 WARRANTY

- A. This Contractor shall warranty the Work of this Section for a period of one (1) year from date of Substantial Completion. Any sagging or fallen insulation shall be repaired without charge for a period of one (1) year from date of Substantial Completion. Guarantee shall be in form found in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 FOAM BOARD INSULATION MATERIALS

- A. Foundation Wall:
 - 1. 2" thick Styrofoam "Cavitymate Plus."
 - 2. R value of ten (10).
- B. Masonry Cavity Wall
 - 1. 2" thick Styrofoam "Cavitymate Plus."
 - 2. R value of ten (10).

2.02 BATT INSULATION MATERIALS

- A. Batt Insulation: Shall be glass fiber building insulation manufactured by Owens Corning Corporation (www.owenscorning.com), CertainTeed Corporation (www.certainteed.com), Johns Manville (www.jm.com).
 - 1. 3-1/2" Faced Batt Insulation: Shall have and "R" factor of R-11 and a permeability factor of .20 and shall meet Federal Specifications HH-1-521-E Type 1.
 - 2. 6" Faced Batt Insulation: Shall have and "R" factor of R-19 and a permeability factor of .20 and shall meet Federal Specifications HH-1-521-E Type 1.
 - 3. 3-1/2" Unfaced Sound Attenuation Batt Insulation (White, Formaldehyde Free): Shall have a flame spread rating of ten (10), smoke developed of ten (10) and comply with ASTM C665, Type 1 and ASTM E136.
 - 4. 6" Unfaced Sound Attenuation Batt Insulation (White, Formaldehyde Free): Shall have a flame spread rating of 10, smoke developed of ten (10) and comply with ASTM C665, Type 1 and ASTM E136.
 - 5. Although not mandatory, it is preferred that "Formaldehyde Free" type fiberglass insulation be used throughout.

2.03 VAPOR RETARDER FACING

- A. Over unfaced batt shall be "FS 25 FRK" facing material with a fire rating Class "A" ASTM C 665 and E 136. This product shall have a flame spread rating of twenty-five (25), fuel contribution of zero (0) and smoke developed of five (5).

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.
- 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. Install boards horizontally on walls.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

- C. Rigid wall insulation shall be installed as noted and detailed in the architectural drawings as recommended by the manufacturer.
 - 1. Tightly butt insulation pieces and extend from floor to top of stud wall at perimeter wall conditions.
- D. Rigid acoustical insulation shall be located where required on drawings.
 - 1. Tightly butt insulation pieces and extend from floor to roof deck.
 - 2. Shall be attached with powder actuated anchors with washers at 12" o.c. each direction.
 - 3. Theatrical grade black acoustical insulation attached to roof deck and/or walls with stik klips (black).

3.03 BATT INSTALLATION

- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall and roof 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.
- E. Where insulation blankets are installed against interior face of walls: refer to drawings.
 - 1. Install two (2) stik klips in rows at 18" o.c. vertically, staggered; hold blanket continuously to the wall.
 - 2. Provide 16" or 24" widths pushed tightly together and laid vertically.
 - 3. Impale insulation and vapor barrier onto stik klips and apply bottom lap cap washer.
 - 4. Staple batts together at each side with 1/2" staples 6" o.c.
- F. Acoustic batt insulation at sound clouds shall be unfaced and installed so as to be not visible from normal occupancy areas. Batts shall be white at painted deck areas or black at theatrical applications.
- G. In cavity walls of plumbing chases provide and install insulation batts as noted on drawings. Whether the batt insulation is faced or unfaced Vapor Retarder Facing is to be adhesively applied to cavity wall framing after installation of the batts so as to prevent insulation from falling out of wall framing.

3.04 PROTECTION

- A. Do not permit installed insulation to be damaged prior to its concealment.

3.05 CLEAN UP

- A. Upon completion of all insulation, remove all implements of service, tools, and excess materials, rubbish and debris, and leave the entire building in a clean, acceptable manner as approved.

END OF SECTION

**SECTION 07 4210
METAL SOFFIT PANELS**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.

1.02 SUMMARY

- A. The work includes, but is not necessarily limited to, furnishing and installation of all preformed metal soffit panels with accessories and flashings as indicated on the drawings or specified herein.

1.03 RELATED WORK

- A. Section 05 50 00 - Metal Fabrications
- B. Section 06 10 00 - Carpentry: Weather barrier.
- C. Section 07 90 00 - Caulking and Sealants

1.04 REFERENCE STANDARDS

- A. ASCE 7 - Minimum Design Loads for Buildings and Other Structures; 2005.
- B. ASTM A 653/A 653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2007.
- C. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2008.
- D. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference; 2005.
- E. ASTM E 1646 - Standard Test Method for Water Penetration of Exterior Metal Roof Panel Systems by Uniform Static Air Pressure Difference; 1995 (Reapproved 2003).
- F. ASTM E 1680 - Standard Test Method for Rate of Air Leakage Through Exterior Metal Roof Panel Systems; 1995 (Reapproved 2003).
- G. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; 2006.

1.05 SUBMITTALS

- A. Product Data
 - 1. Submit manufacturer's technical product data, installation instructions and recommendations for roofing required. Include data substantiating that materials comply with requirements.
- B. Samples
 - 1. Prior to ordering products, submit Manufacturer's standard and premium color Samples for Architect's/Engineer's selection.
 - 2. Prior to starting work, submit two (2) 12" long Panel Samples showing shape, and a representative color chip for Architect's/Engineer's acceptance.
- C. Shop Drawings
 - 1. Submit complete shop drawings detailing all perimeter flashings and joints in accordance with manufacturer's standard recommendations.
 - 2. Describe all proposed details that deviate from what is shown on the plans.
 - 3. Details must allow for expansion and contraction.
 - 4. Refer to Sections 01 3300 - Submittals
- D. Site Conditions
 - 1. Provide completed site condition form for the specified finish to suit actual project conditions.

1.06 QUALITY ASSURANCE

- A. Installer's Qualifications
 - 1. Installer must be approved by the Panel Manufacturer in writing prior to work commencing.
 - 2. Installer shall meet the following:
 - a. Successfully applied five (5) projects of comparable size and complexity which reflect a quality and weathertight installation in the region where the work will be performed.
 - b. Have been in business for minimum period of five (5) years in the region where the work will be performed.
- B. Manufacturer's Qualifications
 - 1. Manufacturer shall have a minimum of ten (10) years' experience supplying metal panels to the region where the work is to be done.
 - 2. Comply with current independent testing and certification as specified.
 - 3. Manufacturer shall provide proof of liability insurance for their metal panel system.
 - 4. Panel manufacturers with full supporting product literature; Flashings & Details Guides, Guide Specifications, and Technical Support shall not be considered equal to the specified product.
- C. Regulatory Agency Requirements
 - 1. Comply with the local Building Code requirements if more restrictive than those specified herein.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect against damage and discoloration.
- B. Handle panels with non-marring slings.
- C. Do not bend panels.
- D. Store panels above ground, with one end elevated for drainage.
- E. Protect panels against standing water and condensation between adjacent surfaces.
- F. If panels become wet, immediately separate sheets, wipe dry with clean cloth, and allow to air dry.
- G. Painted panels shall be shipped with protective plastic sheeting or a strippable film coating between all panels. Remove any strippable film coating prior to installation and in any case, do not allow the strippable film coating to remain on the panels in extreme heat, cold, or in direct sunlight or other UV source.

1.08 PROJECT CONDITIONS

- A. Examine the conditions and substrates in which metal roofing work is to be installed. Substrate shall be installed level and true to avoid panel stresses and distortion.
- B. Field measurements shall be taken prior to fabrication of panels.
- C. Proceed with roofing installation only after satisfactory conditions are met.

1.09 GUARANTEE

- A. Manufacturer's Product Warranty
- B. Manufacturer's standard coating performance twenty (20) year warranty, as available for specified installation and environmental conditions.
- C. Contractor's Warranty
 - 1. Warrant panels, flashings, sealants, fasteners and accessories against defective materials and/or workmanship, to remain watertight and weatherproof with normal usage for one (1) year following Project Substantial Completion date. And shown on form bound within Section 01 78 36, "Form of Guarantee."

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURER

- A. MBCI Manufacturing Co., Houston Texas, (877)713-6224. www.mbc.com
 - 1. Branch Office: Salt Lake City, Utah (800)874-2404.
- B. Soffit Panel Designation: Artian L12, twenty-two (22) gage.
 - 1. Coverage width: twelve (12) inch
 - 2. Panel attachment: Concealed fastening system
 - 3. Finish: Smooth
- C. ALTERNATES:
 - 1. Approval of substitute systems is required prior to bid. The Architect will be the sole judge of what qualifies as an "equal" system. To be approved as an equal system, submit or respond to all items in "Quality Assurance," "Performance Requirements" and "Submittal" sections of this specification. All submittals must be received in the Architect's office a minimum of seven (7) working days prior to bid.
 - a. Morin Corporation, (800)700-6140, Kingspan Panels, (877)638-3266
www.morincorp.com
 - b. Englert, Inc. (800)364-5378 www.englertinc.com
 - 2. Berridge MFR. Co., Houston, Texas (800)669-0009 www.berridge.com
 - 3. Metal Sales Manufacturing Corp. (800)406-7387 www.metalsales.us.com
 - 4. Fabral (800)884-4484 www.fabral.com
 - 5. Firestone UNA-CLAD (763)576-9595 www.UNACLAD.com

2.02 MATERIALS

- A. Panels
 - 1. Base Metal
 - a. Material: Hot dipped galvanized steel conforming to ASTM A446-85, thickness twenty-four (24) ga., (roof) and twenty-two (22) ga. (soffit) UL, 90, coating ASTM A653-94 and A924-94.
 - b. Panels to be perforated and/or non-perforated as detailed on the drawings.
 - 2. Finish
 - a. Finish shall be Kynar 500 or Hylar 5000 Fluorocarbon coating applied on the Berridge Coil Coating line with a top side film thickness of 0.80 to 0.90 mil over 0.20 to 0.25 mil prime coat to provide a total dry film thickness of 1.0 to 1.15 mil. The reverse side shall be coated with a backer coating of 0.25 mil nominal dry film thickness. Finish shall conform to all tests for adhesion, flexibility and longevity as specified by Kynar 500 or Hylar 5000 finish supplier.
 - b. Color shall be as selected by the Architect from the Signature 300 Standard Colors or Signature 300 Metallic Premium Colors.
 - c. Strippable coating shall be applied to the Berridge Coil Coating Line to the top side to protect the finish during fabrication, shipping and field handling. This strippable coating must be removed before installation.
 - d. Field protection must be provided by the contractor at the job site so material is not exposed to weather and moisture.
- B. Accessories
 - 1. Fasteners
 - a. Mechanical clips, fasteners, etc., as per manufacturer's recommendation.
 - 2. Sealant
 - a. Gunnable Grade Caulking: Single component Urethane Caulk.
 - b. Tape Sealant: Butyl.
- C. Fabrication
 - 1. Unless otherwise shown on drawings or specified herein, fabricate panels in continuous one-piece lengths and fabricate flashings and accessories in longest practical lengths.
 - 2. All panels shall be factory formed. Field formed panels are not acceptable.

PART 3 -EXECUTION

3.01 EXAMINATION

- A. Project Conditions
 - 1. Verify that members and/or substrate to receive panels are complete, accurately sized and located, in true plane, secure and otherwise properly prepared.
 - 2. Prior to starting work, notify General Contractor about defects requiring correction.
 - 3. Do not start work until conditions are satisfactory.

3.02 PREPARATION

- A. Field Measurements:
 - 1. Verify prior to fabrication.
 - 2. If field measurements differ from drawing dimensions, notify Architect/Engineer prior to fabrication.
- B. Protection
 - 1. Treat, or isolate with protective material, any contacting surfaces of dissimilar materials to prevent electrolytic corrosion.
 - 2. Require workmen who will be walking on Roofing Panels to wear clean, soft soled work shoes that will not pick up stones or other abrasive material which could cause damage and discoloration.
 - 3. Protect Work of other Trades against damage and discoloration.
- C. Surface Preparation
 - 1. Clean and dry surfaces prior to applying sealant.

3.03 INSTALLATION

- A. All panels shall be installed as per manufacturer's recommendations and with detailed perimeter trim.
- B. All Panels shall be lapped then fastened with concealed anchor attachments.
- C. Flashing
 - 1. Follow manufacturer's directions.
 - 2. Install flashings to allow for thermal movement.
- D. Cutting and Fitting:
 - 1. Neat, square and true. Torch cutting is prohibited.
 - 2. Where necessary to saw-cut panels, debur and treat all cut edges with galvanic paint.

3.04 CLEAN UP AND CLOSE OUT

- A. Panel Damage and Finish Scratches
 - 1. Do not apply touch-up paint to damaged paint areas that involve minor scratches.
 - 2. Panels or flashings that have paint and/or substrate damage shall be replaced as directed by the Architect or Owner's representative.
- B. Cleaning and Repairing
 - 1. At completion of each day's work and at Work Completion, sweep Panels, Flashings and Gutters clean. Do not allow fasteners, cuttings, filings or scraps to accumulate.
 - 2. Remove debris from Project Site upon work completion or sooner, if directed.

END OF SECTION 07 42 10

**SECTION 07 4616
ALUMINUM SIDING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Aluminum Siding.
- B. Aluminum Soffits.
- C. Aluminum trim and accessories.

1.02 RELATED SECTIONS

- A. Section 06 10 00 - Rough Carpentry: Wood stud framing, furring, and sheathing for support of aluminum soffits.
- B. Section 07 21 00 - Building Insulation: Rigid thermal insulation installed behind siding.
- C. Section 07600 - Flashing and Sheet Metal: Sheet metal gutters and downspouts.
- D. Section 07900 - Joint Sealers: Sealants used in conjunction with aluminum siding installation.

1.03 REFERENCES

- A. ASTM D 958 - Practice for Determining Temperatures of Standard ASTM Molds for Test Specimens of Plastics.
- B. AAMA 2605-05 - Voluntary Specification, Performance requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
- C. AAMA 2604 - Voluntary Specification, Performance requirements and Test Procedures for High Performing Organic Coatings on Aluminum Extrusions and Panels.
- D. AAMA 2603 - Voluntary Specification, Performance requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
- E. ASTM E2768-11 - Standard Test Method for Extended Duration Surface Burning Characteristics for Building Materials (30 min Tunnel Test). Results: Zero Flame Spread, Smoke Developed Index of 5. Meets criteria for Class A fire rating.
- F. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
- G. CAN/ULC S114 - Standard method of test for determination of non-combustibility in building materials.

1.04 PERFORMANCE REQUIREMENTS

- A. Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with applicable code.
- B. Movement: Accommodate movement within system without damage to components or movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.
- C. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

1.05 SUBMITTALS

- A. Submit under provisions of Section 01300.
- 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. Installation methods.
 - 4. Shop Drawings: Indicate dimensions, layout, joints, expansion joints, construction details, methods of anchorage, and interface with adjacent materials.

- a. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- b. Verification Samples: For each finish product specified, two samples, minimum size 2 inches (51 mm) by 3-1/2 inches (89 mm), representing actual product, color, and gloss.
- c. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- d. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic cleaning and maintenance of components.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum five years experience producing aluminum finishes of the types specified and AkzoNobel, AAMA 2604 and 2605 Certified.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package and store products under cover in manufacturer's unopened packaging until ready for transport and installation.
- B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- C. Store prefinished material off ground protected from weather, to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- D. Prevent contact with materials capable of causing discoloration or staining.

1.08 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not fabricate products under environmental conditions outside manufacturer's absolute limits.

1.09 SEQUENCING

- A. Coordinate Work with installation of windows, louvers, and adjacent components or materials.

1.10 WARRANTY

- A. Mayne Coatings Corp. limited warranty against cracking, peeling and gloss/color retention within the guidelines stated by the American Architectural Manufacturers Association (AAMA).
- B. Standard Colors:
 - 1. D2000 - AAMA 2604 (5 Year Florida) 15 Year manufacturer's Warranty
 - 2. D3000 - AAMA 2605 (10 Year Florida) 20 Year manufacturer's Warranty
 - a. Woodgrains
 - 1) AAMA 2604 (5 Year Florida) 15 Year manufacturer's Warranty

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Mayne Coatings Corp., which is located at: 27575-50th Ave. ; Langley, BC; Canada V4W 0A2; Tel: 604-607-6630; Fax: 604-607-6680; Email: request info (info@longboardproducts.com); Web: www.longboardproducts.com
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.02 MATERIALS

- A. Extruded Aluminum Siding and Soffits: Longboard Wood Grain Aluminum Siding and Soffits with Alluminate bonded film finish is extruded aluminum with integrated venting system.
 - 1. Stock# 101802 - 4" V-Groove Siding & Soffit - 12 pieces per box in 24' lengths

2.03 ACCESSORIES: PREFINISHED ALUMINUM: PROVIDE WITH MATCHING ACCESSORIES AND STARTER STRIPS AS REQUIRED.

2.04 FINISHES

- A. Lead time varies based on colour and supply. Please check with manufacture for anticipated lead time for wood grain, solid and shimmer colours.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Do not begin installation until colors have been verified.
- B. Verify framing members are ready to receive panel system.
- C. If 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 material under the project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's installation instructions.
- B. Barrier Protection: Do not install over cementitious materials, dissimilar metals or pressure treated material without adequate barrier protection.
 - 1. Install building paper horizontally on walls to receive metal siding.
 - 2. Weather lap edges 6 inches (150 mm) and ends minimum 6 inches (150 mm).
 - 3. Stagger vertical joints of each layer.
 - 4. Securely staple, nail in place.
 - a. Fasten siding to structural supports; aligned, level, and plumb.
 - b. Locate joints over supports.
 - c. Install expansion control joints where indicated.
 - d. Use concealed fasteners unless otherwise approved by Architect.
 - e. Install siding, and accessories in accordance with best practice, with all joint members plumb and true.
 - f. Horizontal/Compression Joints are required for multi-story installations locate joints at floor lines. Joints are flashed minimum ½" (12.7 mm) breaks. Do not caulk.

3.04 FIELD QUALITY CONTROL

- A. After installation of cladding, check entire surface for obvious flaws or defects.
- B. Replace and repair any problem areas, paying close attention to the substrate for causes of the problem.
- C. CLEANING
 - 1. After application of soffits, clean as necessary to remove all fingerprints and soiled areas.
 - 2. Upon completion of soffit application, clean entire area, removing all scrap, packaging, and unused materials related to this work.
- D. PROTECTION
 - 1. Protect installed products until completion of project.
 - 2. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 07 4616

**SECTION 07 5400
FLEXIBLE SHEET ROOFING**

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.

1.02 SUMMARY

- A. Provide all items, articles, materials, operations, or methods listed, mentioned, or herein specified, including labor, materials, equipment and incidentals necessary and required for their completion.
- B. Roofer must be approved by Manufacturer to apply warranted roofs. All materials shall comply and workmanship must be performed in a manner consistent with manufacturer's standard written warranties, FM-I 90 rating (July, 1993) with uplift resistance up to ninety-nine (99) mph and U.L. Class "B" which will be required for this Contract.
 - 1. This project will require a warranty as specified under paragraph 1.6.
- C. "Provide supervision to assure application according to the specifications and in a workmanlike manner." A fully experienced roofing foreman shall be on the job at all times WITHOUT EXCEPTION.
- D. Specification Compliance Will Be Required: A copy of the Owner's and roofing manufacturer's specifications shall be kept on the job at all times for reference by the roofing foreman and authorized representatives of the Owner. Failure to comply with specifications may lead to rejection of the Work.
- E. See drawings and details for type, quantity, and location of moisture protection work required. Include all administration, facilities and labor required to furnish the expertise, degree of workmanship, materials and accessories, necessary for the timely and satisfactory integration of the following items into the total building system in compliance with the specifications. The Work throughout shall be completed in a manner to assure that no water leakage into the roof system or building results. All details (including metal flashings) relating to the installation of the roof system, shall be approved by the roofing contractor or manufacturer.
- F. Work includes, but is not limited to the following.
 - 1. Furnish and install a mechanically attached membrane roofing system complete with all single ply integral flashings, expansion joints, mechanical fasteners, insulation, heat welding and manufacturer's twenty (20) year total system warranty for water tightness and paid for by roofing contractor. Warranty shall cover both material and labor expenses with inflationary coverage throughout duration of warranty period. Roofing contractor shall furnish a copy of warranties at substantial completion. Warranty shall begin on the date of Substantial Completion.
 - 2. All pre-painted sheet metal, counter-flashing, etc. are required to be placed in conjunction with the placement of the flexible sheet roofing system.
 - 3. If required furnish and install isocyanurate foam insulation board (R36.0 aged), covered with 1-1/2 lb. E.P.S. board tapered to form drainage crickets as indicated. Insulation to be mechanically attached to deck in two (2) layers. All insulation joints to be staggered.
 - 4. Coordinating the installation of all plumbing, mechanical and electrical penetrations.
 - 5. Furnish and install roof walkway pads applied to roof membrane and hot air welded in layout as shown on roofing plan.
- G. Clean up and removal of debris as a result of this Work.

1.03 RELATED WORK

- A. Roof deck and openings in roof deck.
- B. Plumbing vents, roof drains, installation, and ducts passing through roof.
- C. Electrical penetrations.

- D. Equipment bases, galvanized sheet metal flashing related to heating and ventilation equipment hoods and ducts, exhaust ducts and fans, etc
- E. Wood plates, nailers, as a part of roofing installation, Section 06 10 00, "Carpentry."
- F. Prefinished sheet metal flashings, Section 07 62 00, "Flashing and Sheet Metal."

1.04 QUALITY ASSURANCE

- A. Roofing manufacturer must be listed in NRCA's low slope roofing materials guide.
- B. Roofing manufacturer must have a successful 10-year history as a roofing manufacturer.
- C. Roofing manufacturer's proposed system(s) must have a successful 10-year minimum history with that system.
- D. Subcontract the roofing, insulation and associated work to a single firm specializing in such and approved by manufacturer so that there will be undivided responsibility for the performance of the Work. Roofing warranty shall include roofing, insulation and associated sheet metal flashings and be issued by roof membrane manufacturer.
- E. Qualifications: Submit confirmation from Manufacturer that Contractor is an approved applicator of the roofing materials. Manufacturer to apply total twenty (20) year roofing warranty.

1.05 SUBMITTALS

- A. Submittals are to be furnished to the Architect at least thirty (30) days before
- B. commencement of work: Refer to Sections 01 33 00, "Submittals."
 - 1. Submit confirmation from manufacturer that Contractor is an approved applicator of roofing material incorporated into the roof.
 - 2. Manufacturer's Data: Submit manufacturer's specifications and installation instructions for flexible sheet roofing and flashing system as may be required by this Specification. Submit samples of proposed roofing material, insulations, attachment plates, and screws.
 - a. Outline of the roof and roof size.
 - b. Layout of drainage crickets/verification that the system will provide one hundred percent (100%) evacuation of the roof. Note: Standing water will not be allowed on the roof.
 - c. Perimeter and penetration details.
 - d. Plan of major seam locations.
 - e. Special details.
 - f. Roofing manufacturer must show documented proof of plan to meet warranty obligations. This proof must be submitted with contractor's submittal package.
 - 3. Contractor's Review: Along with Manufacturer's Data, submit written statement signed by contractor and the roofing subcontractor, stating that the Architect's drawings and specifications for roofing and flashing have been reviewed with an agent of the manufacturer of the primary roofing materials, and that he is in agreement that the selected systems for roofing and flashing are proper, compatible, and adequate for the applications shown, and that the conditions and details are not in conflict with the roofing manufacturer's roofing and flashing warranty requirements. Show by copy of transmittal form that copy of statement has been transmitted to roofing manufacturer. (A signed, reviewed copy of the manufacturer's notice of award will satisfy this requirement.)
 - 4. Statement of Application: Upon completion of work, submit a statement signed by contractor and roofing subcontractor, stating that the roofing and membrane flashing comply with these specifications and that the installation methods comply with the manufacturer's printed instructions and are proper and adequate for the conditions of installation and use.
 - 5. Project Registration Form: Upon receipt of Contract, submit a project registration form to the Architect's office. As a part of this Contract, herein indicate scheduling of roofing operations and providing on the job a technical serviceman for a period of not less than three days to supervise start-up and roofing sequences.

- C. MANUFACTURERS: Accepted minor differences in details and materials are allowed to accommodate standard manufacturing practices of each accepted manufacturer. Contractors shall submit in either writing or detailed proposed revisions to Architect's drawings or required for complete and acceptable installation of his roofing system and be responsible for coordinating those revisions as they affect other trades.

1.06 GUARANTEE

- A. Roofing system shall be applied by a roofing contractor approved by manufacturer. After Substantial Completion of the building, the warranty will be required by the manufacturer a period of twenty (20) years for FM-I 90 rating (July, 1993) with uplift resistance up to ninety-nine (99) mph and U.L. Class "B" which will be required for this Contract. Contractor workmanship warranty shall be a minimum of five (5) years. Acceptance of shop drawings does not relieve Contractor from guarantee/warranty requirements.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Roofing Materials and Accessories
1. Fibertite 36 mil as manufactured by Seaman Corpora
 2. All materials used for flexible sheet roofing systems shall be as furnished by accepted manufacturers and as further specified herein.
 3. The roofing membrane shall be of manufacturer's standard color and shall meet or exceed the following:
 - a. ASTM Standard Specifications:
 - 1) ASTM D-6754 02 for KEE membranes.
 - 2) ASTM D-751
 - 3) ASTM D-2136
 - 4) ASTM D-5602
 4. Membrane must be manufactured with a non-wicking scrim.
 5. Only balanced sheets are acceptable. The scrim must be near the center of the sheet with a minium of 23 mils polymer above scrim.
 6. Sheets shall be no wider than 8'-0" and no longer than 100'-0"
 7. Prepainted metal shall be white membrane laminated to minimum twenty-five (25) ga. galvanized steel.
 8. Flashing material for parapet walls and curbs shall be compatible with roofing membrane and comply with roofing manufacturers requirements.
 9. Prefabricated inside and outside corners shall be of same color as, and be compatible with roofing membrane and comply with roofing manufacturers requirements.
 10. Solvent welding solution will not be allowed on this project.
 11. Heat welder shall be as recommend by roofing manufacturer.
 12. Adhesive for bonding membrane to substrates such as masonry and metal or plastic pipes shall be compatible with roofing membrane and comply with roofing manufacturers requirements.
 13. Caulking shall be compatible with roofing membrane and comply with roofing manufacturers requirements.
 14. Attachment plates shall be as follows:
 - a. Membrane shall be 2" diameter plates.
 - b. Insulation shall be 3" diameter plates.
 15. Fasteners shall be corrosion-resistant screws or anchors of a type and length appropriate for fastening through protection layer to the structural roof deck recommended by the roofing manufacturer.
- B. Roofing Insulation: Polyisocyanurate must meet required minimum aged R-Value of 34.0 and ASTM C 1289-95, installed in two (2) layers.
1. As supplied and warranted by selected roofing manufacturer.
 2. Aged R- value shall be based upon twenty (20) year time weighted average LTTR (Long term Thermal Resistance).

- C. Drainage Crickets
 - 1. E.P.S. Board: Shall be 1-1/2 lbs. density expanded polystyrene of configuration and slope as shown on the roof plan; as supplied and warranted by membrane manufacturer.
- D. Mechanical Fasteners: Metal plates, caps, battens, accessory components, fastening devices, and adhesives to suit substrate and as supplied and warranted by membrane manufacturer.
- E. Flashing Membrane: Manufacturer's standard flashing membrane compatible with flexible sheet membrane.
- F. Roof Walkway Pads: Shall be as recommended by roofing manufacturer, adhesively applied and hot air welded to roofing membrane in layout as shown on roofing plans.
- G. Rooftop Support Products: For pipe, conduit, duct, etc., provide sleeper supports from one of the following manufacturers or an approved equal:
 - 1. MIRO Industries, Inc.
 - 2. MIFAB, Inc.

PART 3 - EXECUTION

3.01 PREPARATION

- A. Examination and Acceptance of Working Surfaces: This Contractor shall examine all work in place on which the specified roofing and flashing system is to be applied to ensure that all conditions are satisfactory for installation. Verify that construction is complete for total area to be roofed, that all decking has been completed, that surfaces are dry, smooth and clean, uniform, sound and free of irregularities and that all penetrations, nailers, reglets, metal flashing, curbs and other accessory items are properly installed. Report in writing to the General Contractor and Architect any defects or unsatisfactory conditions which may adversely influence completion or performance of specified roofing system. Absence of such notification will be construed as acceptance of all the above-mentioned work in place by the roofing contractor.
 - 1. Do not proceed with roofing installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer, the Architect and the Owner Representative.
 - 2. No roofing shall be commenced until the Architect has received a written statement signed by the roofing contractor that all substrate conditions are acceptable to the manufacturer and Contractor for installation of the specified roofing and flashing system.

3.02 STORAGE AND PROTECTION

- A. Contractor shall be responsible for protection of the building and landscaping in the areas of his operations. He shall repair and/or replace, at his expense, and as approved by the Architect, all items (including contents) damaged by not keeping building interior dry at all times.
- B. All materials shall be protected in transit and in storage such that they are not subject to damage or wetting by weather. Roofing materials shall be stored off ground, off roof, and under water-tight, ventilated and secured covering at all times. DO NOT overload roof.
- C. Cover wall with canvas, not visqueen or similar material where materials are lifted over the wall.
- D. Adhesives contain flammable solvents and shall be stored in a well-ventilated area protected from water, direct sunlight, temperatures below forty degree (40°) F., or in excess of one hundred degrees (100°) F. and sources of ignition.
- E. All materials shall be handled so as to prevent damage to roofing system components.
- F. Materials damaged in handling or storage shall be removed from the jobsite.

3.03 SHEET METAL WORK AND ACCESSORIES

- A. Counterflashings are provided under another Section. Metal counterflashings that are an integral part of the roofing shall be installed simultaneously with the roof application.
- B. Be responsible for the proper attachment of specified work to any metal or related work that is embedded in or in contact with and becomes an integral part of roofing or flashing system, even when such work is provided under other Sections of the Project Manual. Use manufacturer's recommended fastening system at such locations.

- C. Consult the drawings of other trades, and with the contractors for other trades, coordinate their work with the Work under this Section to avoid omissions and delays. Responsibility for coordinating the Work of this Section with that of other trades shall be an obligation under this Section.

3.04 GENERAL NOTES

- A. Schedule installation to assure that work started in any particular area will result in a fully completed and protected roof system at the end of each work day. Roofing that has been "phased" will not be acceptable.
- B. If construction scheduling requires getting the building "in the dry" before the permanent system can be completely applied in the manner specified, temporary roofing may be installed at General Contractor's option and expense, of a type accepted by the Architect and consultant.
- C. Furnish and install materials per manufacturer's written warranty requirements mentioned above and accepted.
- D. Labels: All materials shall be clearly labeled with all pertinent information, including UL and other specified insurance agency's labels for specified roof deck construction.
- E. The roofing system shall not be installed when the air temperature is below forty degrees (40°)
- F. unless manufacturer's recommended precautions for cold weather application are followed.

3.05 CAUTIONS

- A. Do not use oil base or plastic roof cement in conjunction with roofing materials.
- B. Waste products (petroleum, grease, oil and solvents - vegetable or mineral oil and animal fat - direct contact with steam venting) should not be allowed to come in contact with the roofing system.
- C. Splicing and bonding surface must be dry.

3.06 PREPARATION OF SUBSTRATE:

- A. The General Contractor shall be responsible for providing proper substrate to receive the roofing system. The roofing subcontractor shall notify the General Contractor in writing of any and all defects in the substrate and work shall not proceed until such defects have been corrected. This system is designed to be installed at the high point of the roof working to the lowest point to avoid possibility of water under the completed roof system.

3.07 INSTALLATION

- A. Roofing System Installation
 - 1. Insulation: Thermal insulation boards shall be laid as follows:
 - a. Over new metal decking, apply two (2) layers of insulation. Each insulation layer to be mechanically fastened in accordance with FM-I 90 (per manufacturer's specifications) with all joints being staggered in both directions from the first layer by a minimum of 12". Provide insulation crickets to drains and scuppers to provide one hundred percent (100%) evacuation of the roof. No standing water shall be permitted. No more insulation shall be installed than can be covered by the completed roof system by the end of the day or the onset of inclement weather.
 - 2. Flashing: Flashing at the roof perimeter and at all penetrations, including drains, pipes, conduits, curbs, walls, expansion joints, and vents, shall be installed. Flashing shall be fabricated from prepainted metal and/or unreinforced flashing material. Prefabricated inside and outside corners shall be used where possible. Prepainted metal base flashing and gravelstop shall be fastened at perimeter with approved fasteners at required spacing. All joints in coated metal shall be butted leaving a 1/4" to 1/2" space between pieces and shall be seamed using minimum 5" wide reinforced flashing material over 2" wide tape as shown on the drawings.
 - 3. Roofing Membrane: The membrane shall be unrolled and be positioned without stretching as close to and parallel with a roof edge as possible as shown on the drawings. Adjoining sheets shall be applied in the same manner lapping the previous edges a minimum of 4". End joints shall be staggered. The membrane shall then be allowed to relax for at least 1/2

hour before fastening. At each lap, the top sheet shall be folded back about 1' and fasteners shall be applied through attachment plates and the bottom sheet 1" from the edge as shown on the drawings. Fasteners and plates shall be applied as recommended by the manufacturer to meet FM- I 90 wind resistance rating. The top sheet shall be allowed to fall freely back into place without stretching or wrinkling with a minimum 4" overlap. The clean and dry laps shall be welded continuously 1-1/2" wide using heat. Excess heat shall be kept away from the insulation or cushioning layer. Additional fasteners shall be applied through attachment plates and the roofing membrane along the contour of each sheet, at the corners of the roof and at the perimeter of the roof as recommended by the membrane manufacturer. Each fastener and attachment plate shall be covered with a 7" patch of membrane heat welded in place 2" wide around its perimeter. The roofing membrane shall be heat welded 1-1/2" wide to all perimeter and base flashings on the plane of the roof as shown on the drawings. All seams shall be tested with a probe for integrity.

- a. Coordinate installation of screws required for roofing and installation so as not to damage any interior mechanical, plumbing, electrical, etc. If damage does occur, Contractor shall repair and/or replace work as acceptable to the Architect at no additional cost to the Owner.
4. If there are any discrepancies between or within the bidding documents, the more stringent requirement will be enforced as determined by the architect.
- B. Drain Bowls: Drain sumps are to be constructed out of manufactured tapered insulation panels. Hand-cut tapered sumps are not allowed.
- C. Walkway Installation: Mark lines on the roof to determine location and direction(s) of walkway network. The roof surface shall be clean. Adhesively apply pads to comply with roofing manufacturers requirements. Consult manufacturer for installation recommendations without the use of adhesive or mechanically attached roofs. Do not use solvent based adhesive when polystyrene is used as an insulation board in the roof assembly or in geographic areas where VOC compliance is not met.
 1. Install walkway pads and space pad joints to permit drainage.

3.08 INSPECTION:

- A. Upon completion of the installation, an inspection shall be made by a representative of the manufacturer to ascertain that the flexible sheet roofing system has been installed according to manufacturer's published specifications and details. Warranty will be issued upon acceptance of the installation.
- B. Roofing manufacture shall be required to release all inspection reports concerning warranted roof system to the contractor.

3.09 PRECAUTIONARY NOTES

- A. Construction Traffic: The General Contractor and roofer shall take precautions to prevent all construction trades from damaging the roof during and after construction.
- B. Roofing contractor shall be responsible to provide safe access to roof during roofing installation.
- C. All footwear on roof during the entire construction shall be nailless type. The General Contractor shall post signs to assure this is followed.
- D. Contractors on job will not store materials and/or equipment for this project on the roof. Any materials and/or equipment brought up onto the roof will be installed immediately or set on wood supports to prevent damage to roof membranes.

3.10 CLOSEOUT

- A. Submit to architect for review, manufacturer's inspection reports for warranted roof system.

END OF SECTION 07 54 00

**SECTION 07 7000
ROOF ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Roof access hatches where indicated on drawings
- C. Roof hatch safety rails at each new roof access hatch

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications
- B. Section 07 5400 - Flexible Sheet Roofing
- C. Section 07 6200 - Flashing and Sheet Metal: Roof accessory items fabricated from sheet metal.
- D. Section 23 0100 - Mechanical Requirements
- E. Section 26 0507 - Electrical Connections for Equipment

1.03 REFERENCE STANDARDS

- A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- B. FM (AG) - FM Approval Guide; Factory Mutual Research Corporation; current edition.
- C. UL (DIR) - Online Certifications Directory Current Edition.

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.
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
 - 4. Maintenance requirements.
- C. Warranty Documentation:
 - 1. Submit manufacturer warranty.
 - 2. Ensure that forms have been completed in Owner's name and registered with manufacturer.

1.05 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.

1.06 WARRANTY

- A. Provide a written guarantee for a period of one (1) year, unless noted otherwise, from date of Substantial Completion. Guarantee shall be in a form provided in Section 01 78 36, "Form of Guarantee." Submit three (3) copies to the Architect prior to final acceptance of the work.

PART 2 PRODUCTS

2.01 ROOF HATCHES AND VENTS MANUAL OPERATION

- A. Roof Hatch Manufacturers:
 - 1. Babcock-Davis: www.babcockdavis.com.
 - 2. Bilco Company: www.bilco.com/sle.
 - 3. Dur-Red Products: www.dur-red.com.
 - 4. Milcor, Inc: www.milcorinc.com.

5. Mifab, Inc; www.mifab.com.
 6. Activar Inc., JL Industries: www.activarcpg.com.
 7. Elmdor/Stoneman Manufacturing Co.: www.elmdorstoneman.com.
- B. Roof Hatch
1. Furnish and install 3'-0" x 3'-0" Bilco Co., Type "NB-50TB" or other roofing scuttle accepted by the Architect and as shown on the drawings with fourteen (14) ga. liner and 12" high curb.
- C. Roof Hatch Safety Rails
1. Furnish and install SafePro Roof Hatch Rails at each roof hatch access. Refer to drawings and field verify required size. www.safeprosafety.com Terry Orchard Tel. 801-831-2100 terryorchard@cbs-utah.com
 - a. Other manufacturer's offering similar products are welcome to submit a substitution request for inclusion in the project.
- D. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
1. Insulation: Manufacturer's standard; 1 inch (25 mm) rigid glass fiber, located on outside face of curb.

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 methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.

3.03 INSTALLATION

- A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.

3.04 CLEANING

- A. Clean installed work to like-new condition.

3.05 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

**SECTION 07 9000
CAULKING AND SEALANTS**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Provide all labor, materials, services, equipment, scaffolding, etc. to complete all caulking shown on the drawings or specified herein.
- C. Work included in this Section: All caulking as shown or referenced on the drawings.
 - 1. Caulking of open joints left between building materials and where necessary to seal joints against passage of water and air, and to make building entirely weatherproof.
 - a. Caulk perimeter of each electrical outlet, switch, etc., which occurs on an exterior wall exposed to weather.
 - 2. Where the use of mastic or caulking, specified in other Sections of this Specification is to make the various installations weathertight, the caulking materials shall be provided and applied by the trade performing the respective work. Such work shall conform to the requirements of this Section.
 - 3. Caulking both sides of all exterior and interior hollow metal door or window jambs, heads and sills of windows.
 - 4. Caulking of perimeter building intersection with walks and exterior sidewalk expansion joints.

1.02 RELATED WORK

- A. Section 06 4000 - Prefinished Cabinets and Trim
- B. Section 07 4616 - Aluminum Siding
- C. Section 08 4000 - Aluminum Storefront and Curtain Wall
- D. Section 09 2000 - Gypsum Board Assemblies
- E. Section 09 3000 - Ceramic Tile
- F. Section 09 9000 - Painting
- G. Division 22 – Plumbing.

1.03 REFERENCE STANDARDS

- A. ASTM C 834 - Standard Specification for Latex Sealants; 2005.
- B. ASTM C 919 - Standard Practice for Use of Sealants in Acoustical Applications; 2008.
- C. ASTM C 920 - Standard Specification for Elastomeric Joint Sealants; 2005.
- D. ASTM C 1193 - Standard Guide for Use of Joint Sealants; 2009.
- E. ASTM D 1056 - Standard Specification for Flexible Cellular Materials--Sponge or Expanded Rubber; 2007.
- F. ASTM D 1667 - Standard Specification for Flexible Cellular Materials--Poly(Vinyl Chloride) Foam (Closed-Cell); 2005.

1.04 SUBMITTALS

- A. Submit in accordance with Sections 01 33 00, "Submittals."
- B. Submit samples of cured materials with manufacturer's technical data to the Architect in accordance with Sections 01 3300 - Submittals.

1.05 WARRANTY

- A. Joints caulked and sealed shall remain water, air, dust and weather-proof for a period of five (5) years from date of Substantial Completion and guarantee shall stipulate agreement to repair or replace, at no cost to the Owner, defective work which shall include splitting, lack of bonding,

leakage, cracking, crumbling, melting, shrinking, running or staining of adjacent work. Contractor will execute three (3) copies of a five (5) year guarantee and submit the same to the Architect prior to final acceptance. Guarantee shall be in the form bound in Division 1 – General Requirements of this Project Manual and executed by the caulking contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Deliver sealant and other materials in unopened factory sealed containers.
- B. Exterior Sidewalk Expansion Joint Sealant
 - 1. Tremco, "THC-900", multi component, self leveling polyurethane.
 - 2. Complies with ASTM C-920 and Federal Specification TT-S-00230C.
- C. General Exterior Sealant
 - 1. Tremco, "Dymeric 511", multi-component poly-urethane.
 - 2. Complies with ASTM C-920 and Federal Specification TT-S-00227E.
 - 3. Custom color as selected by the Architect.
- D. General Interior Sealant
 - 1. Tremco Spectrum 1, one (1) part silicone joint sealant.
 - 2. Complies with ASTM C-920 and Federal Specification TT-S-001543A.
 - 3. Custom color as selected by the Architect.
 - 4. Do not use any polyurethane sealant in any interior application.
- E. Acceptable Manufactures
 - 1. Dow Corning: www.dowcorning.com
 - 2. Bostik: www.bostik-us.com
 - 3. Sika Corp.: www.sika.com
 - 4. Pecora Corp.: www.pecora.com
 - 5. Sherwin-Williams: www.sherwin-williams.com

PART 3 - EXECUTION

3.01 JOINT CLEANING

- A. Apply sealant to clean, dry surface free from grease, oil, wax or other foreign matter tending to destroy or impair adhesion. Clean and prime in accordance with sealant manufacturer's instructions.

3.02 APPLICATION

- A. Apply sealants strictly in accordance with manufacturer's instructions and supervision by manufacturer approved applicator. Provide technical field assistance by manufacturers to ensure proper mixing of sealants, cleaning of surfaces and application of materials.

3.03 CLEANING AND PROTECTION

- A. Carefully protect adjoining surfaces from staining. Immediately remove any material on surfaces not to receive sealant and restore finish as required. Where cleaning and restoration is not acceptable, remove affected work and provide new work conforming to applicable requirements as directed at Contractor's expense.

3.04 JOINTS

- A. Fill joints partially with closed cell expanded backing using only compatible materials until joint width does not exceed joint depth. Minimum joint width for metal or metal joints is 1/8" and 1/4" for others, maximum 3/4" width for all joints. Apply sealant under sufficient pressure to completely fill voids. Finish exposed joints smooth, flush with surface or recessed. Apply non-tracking sealant to concrete expansion joints subjected to foot or vehicle traffic loading. Provide strippable masking for factory-applied sealing materials to prevent dirt contamination until parts are assembled. Width to depth proportions per manufacturer's recommendations 3/8" maximum joints require oil base sealant.

END OF SECTION 07 9000

**SECTION 08 1000
HOLLOW METAL DOOR AND WINDOW FRAMES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, material, services, transportation, etc. to manufacture and deliver to the job site all hollow metal door frames, borrow lights and window frames as shown on the drawings, door and window schedules or specified herein, complete.
- C. Hollow metal frames for wood doors.
- D. Hollow metal borrowed lites glazing frames.

1.02 RELATED REQUIREMENTS

- A. Cooperate with all other trades as necessary to ensure proper and adequate installation of all metal doors and frames.
- B. Section 07 9000 - Caulking and Sealants
- C. Section 08 7000 - Finish Hardware
- D. Section 08 8000 - Glazing: Glass for doors and borrowed lites.
- E. Section 09 9000 - Painting

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ANSI/SDI A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finish Coatings for Steel Doors and Frames 2007 (R2011).
- C. ANSI/SDI A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames and Frame Anchors 2011.
- D. ANSI/SDI A250.8 - Specifications for Standard Steel Doors and Frames (SDI-100) 2014.
- E. ANSI/SDI A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames 2011.
- F. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.
- G. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2020.
- H. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009 (Reapproved 2016).
- I. ASTM E413 - Classification for Rating Sound Insulation 2016.
- J. BHMA A156.115 - American National Standard for Hardware Preparation in Steel Doors and Steel Frames 2016.
- K. NAAMM HMMA 840 - Guide Specifications for Installation and Storage of Hollow Metal Doors and Frames 2007.
- L. NAAMM HMMA 860 - Guide Specifications for Hollow Metal Doors and Frames 2018.
- M. NAAMM HMMA 861 - Guide Specifications for Commercial Hollow Metal Doors and Frames 2014.
- N. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2016.
- O. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies 2017.
- P. UL (DIR) - Online Certifications Directory Current Edition.
- Q. UL 10B - Standard for Fire Tests of Door Assemblies Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. Submit in accordance with Section 01 3300 - Submittals
- B. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes; and one copy of referenced standards/guidelines.
- C. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
- D. No fabrication shall take place until shop drawings have been approved.

1.05 QUALITY ASSURANCE

- A. Frames: Shall comply with specifications of the Steel Door Institute.
- B. Performance of Finishes: Prime finishes on all doors and frames shall meet requirements as stated herein.
- C. Fire Doors and Frames: When specified for compliance to building codes, provide the type of fire door and frame assembly that has been investigated and successfully fire tested in accordance with the latest revision of ASTM Designation E-152, UL 10 (b), NFPA 252 or ANSI Standard A2.2. Identify the assembly by labels of the agency accepted by the authority having jurisdiction. Indicate on the door and frame label the applicable fire test rating for the door construction furnished. ANSI A155.1-(latest edition) (UL 63) is a recognized standard for designing and constructing fire door frames.
- D. All hollow metal frames for doors or windows of non-standard size or design, which are within a rated wall assembly must have the following:
 - 1. An accompanying letter from the Supplier declaring that the non-standard frame is constructed in every way the same as a standard rated frame.
 - 2. That the frame will bear a "Construction" label noting the above.
 - 3. The frame must be grouted full.
 - 4. In addition to the above from the supplier each condition must have the approval of the State Fire Marshal's Office.
- E. Copies of Documents at Project Site: Maintain at the project site a copy of each referenced document that prescribes installation requirements.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. All doors shall be packaged in full cartons. All corners and edges shall be sufficiently padded to protect from damage. Cartons shall be securely banded. Any damaged parts shall be replaced.
- B. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
- C. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.
- D. Doors and frames shall be delivered by the Contractor at the jobsite and handled in a manner so as not to be damaged. They shall be stored upright in a protected area on wood runners or skids and shall be covered with vented tarpaulins or vented plastic.

1.07 WARRANTY

- A. Hollow metal door and frame contractor shall furnish the Owner a written guarantee that materials furnished and workmanship performed are first class, and that he will make good, at his own expense, any defects in material or workmanship that may occur within one (1) year after date of Substantial Completion. Refer to Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hollow Metal Doors and Frames:

14324 / State Bank of Southern Utah - Gunnison Branch	08 1000 - 2	Hollow Metal Door and Window Frames

1. Drawings and specifications are based on products manufactured by Curries Company, (www.curries.com). Accepted Minor differences with certain details are allowed to accommodate standard manufacturing practices of reputable door and frame manufacturers. Tolerances shall meet Steel Door Institute (SDI) recommendations. In addition to Curries Company, the following manufacturers are approved:
2. Ceco Door, an Assa Abloy Group company; [____]: www.assaabloydss.com.
3. DKS Steel Door and Frame Systems, Inc. www.dksdoors.com
4. Republic Doors; [____]: www.republicdoor.com.
5. Steelcraft, an Allegion brand; [____]: www.allegion.com/sle.
6. General Contractors may elect to use Robert I Merrill Company, www.rimdoor.com as a proposed substitute with add or deduct from the base bid. Refer to Schedule 'E' of the Request for Proposal.
7. Other manufacturers desiring to bid this project may do so by following the requirements of Section 00 4325 - Product Substitutions.

2.02 DESIGN CRITERIA

- A. Hollow Metal Door Frames
 1. Type: Provide welded-type frames only.
 2. Fabrication: Use sixteen (16) ga. cold-rolled stretcher-leveled furniture stock steel, free of defects impairing strength or appearance. Accurately fabricate with surfaces free of warp, wave, buckle, or other defects. Connect joints by continuous welding, exposed welds ground smooth and flush. Reinforce heads over 42" wide with twelve (12) ga. steel channel. Double door frames shall be fourteen (14) ga.
 3. Hardware Reinforcements: Obtain templates from hardware supplier, and coordinate hardware placement with other trades. Provide cut-outs and welded steel reinforcements for hardware, minimum ten (10) ga. for hinges and door closers, twelve (12) ga. for other items. Provide galvanized sheet metal plaster guards back of cutouts in frames for concrete walls and plaster partitions. Provide drilled holes and install mutes furnished with finish hardware. (Must comply with SDI recommendations.)
 4. Anchors: Types suitable for wall construction, three (3) per jamb, four (4) per jamb with transom, and floor clips, with two (2) anchors for each head over 42" wide. Use galvanized anchors and fasteners. Where frames are required to bear Underwriters' Laboratories labels, anchors shall be made of not less than fourteen (14) ga. with yokes spot welded to the inside of jambs on 24" centers, and anchors shall be adjustable with 6" vertical adjustments.
 5. Knee Anchors, Spreaders: For frame, mullion bottoms extending to floor, use knee angle anchors, 2" x 2" x 4" long; spot weld to frame; provide two 3/8" holes in horizontal leg. Provide spreaders for frames of two (2) 2" x 3/4" steel channels; tack weld to jambs, mullions.
 6. Labeled Openings: Provide doors and frames bearing scheduled UL label when required by door schedule. Fire rated doors and frames shall be installed with clearances as specified in N.F.P.A. pamphlet No. 80 (max. dimension of 3/4" from bottom of door to rough floor.)
 7. Primed Finish: Refer to paragraph D.
- B. Hollow Metal Borrow Light and Window Frames:
 1. Conform material, fabrication, and anchor to requirements specified for hollow metal door frames. Form frames with integral glass stops on one side, and provide twenty (20) ga. removable steel stops on other, corners mitered and welded with welds ground smooth. Secure stops with oval head screws at 5" to 6" intervals. Unless otherwise indicated, secure glass in interior partitions in place with glazing moldings on corridor side.
 2. Primed Finish: Refer to paragraph D.
- C. Finish of Doors and Frames: Fill depressions and defects with mineral filler, sanded smooth and re-primed.
 1. After fabrication, thoroughly clean, phosphate treat (to assure maximum paint adhesion) and spray all surfaces of the door and frame exposed to view with a coat of rust inhibiting primer, baked on. SDI-118, "Test Procedure and Acceptance Criteria for Prime Painted

Steel Surfaces" shall apply to the product finish.

- D. Glazing Provisions: Shall be provided where required with glazing pockets prepared to receive 1/4" or 1" thick lights, and shall include all necessary steel trim, steel glazing beads for glazed frame designs.

2.03 HOLLOW METAL FRAMES

- A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
- B. Frame Finish: Factory finished.
- C. Interior Door Frames, Non-Fire Rated: Full profile/continuously welded type.
 - 1. Frame Metal Thickness: 18 gage, 0.042 inch (1.0 mm), minimum.
- D. Door Frames, Fire-Rated: Knock-down type.
 - 1. Fire Rating: Same as door, labeled.
 - 2. Frame Metal Thickness: 18 gage, 0.042 inch (1.0 mm), minimum.
- E. Frames for Wood Doors: Comply with frame requirements in accordance with corresponding door.
- F. Borrowed Lites Glazing Frames: Construction and face dimensions to match door frames, and as indicated on drawings.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify that opening sizes and tolerances are acceptable.
- C. Verify that finished walls are in plane to ensure proper door alignment.
- D. Verify dimensions of openings and floor grades, location and arrangement of embedded bolt anchorages to accommodate the door hardware and equipment.

3.02 INSTALLATION

- A. Install standard steel doors, frames and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.
- B. Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames". Unless otherwise indicated.
 - 1. Place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
 - 2. In concrete or masonry construction locate three (3) wall anchors per jamb adjacent to hinge location on hinge jamb. Acceptable anchors include wire anchors and masonry tee anchors.
 - 3. Install fire-rated frames in accordance with NFPA Std. No. 80.
 - 4. In metal stud partitions install at least three (3) wall anchors per jamb at hinge and strike levels. In closed steel stud partitions, attach wall anchors to studs with screws.
 - 5. Frames: Install plumb, straight, in true alignment and rigidly connect to walls and building construction. Erect in proper sequence with work of other trades to prevent delays. Conform to manufacturer's instructions and accepted shop drawings.
- C. Doors: Adjust for freedom from binding and to assure proper operation. All fire rated doors shall be installed in the frames at the factory or by an individual in the field authorized to do so.
- D. Finish Hardware: Install finish hardware on hollow metal work as furnished by hardware supplier. Drilling and tapping shall be done in the field for such items as closers, stops, escutcheons, kick plates, etc. Finish hardware shall be applied in the field. After installation and fitting, remove all finish hardware, tag and box and reinstall after completion of painting. Adjust and leave in perfect working condition.

- E. Coordinate frame anchor placement with wall construction.
- F. Coordinate installation of hardware.
- G. Coordinate installation of glazing.
- H. Touch up damaged factory finishes.

3.03 TOLERANCES

- A. Clearances Between Door and Frame: Comply with related requirements of specified door and frame standards or custom guidelines indicated.

3.04 ADJUSTING

- A. Adjust for smooth and balanced door movement.
- B. Adjust sound control doors so that seals are fully engaged when door is closed.
- C. Test sound control doors for force to close, latch, and unlatch; adjust as necessary in compliance with requirements.

3.05 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. Furnish all labor, materials, equipment, tools and services required to fully complete all Wood Door work as is indicated on the drawings and/or specified herein including, but not limited to, the following described items.
- B. Flush wood doors; flush and flush glazed configuration; fire rated, non-rated, acoustical, and special function.

1.02 RELATED REQUIREMENTS

- A. Section 08 1000 - Hollow Metal Door Frames.
- B. Section 08 7100 - Door Hardware.
- C. Section 08 8000 - Glazing.
- D. Section 09 9000 - Painting: Field finishing of doors.
- E. Section 09 9300 - Staining and Transparent Finishing: Field finishing of doors.

1.03 REFERENCE STANDARDS

- A. AWI/AWMAC/WI (AWS) - Architectural Woodwork Standards 2014, with Errata (2016).
- B. AWMAC/WI (NAAWS) - North American Architectural Woodwork Standards, U.S. Version 3.1 2016, with Errata (2017).
- C. NFPA 80 - Standard for Fire Doors and Other Opening Protectives 2019.
- D. UL 10B - Standard for Fire Tests of Door Assemblies Current Edition, Including All Revisions.
- E. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies Current Edition, Including All Revisions.
- F. WDMA I.S. 1A - Interior Architectural Wood Flush Doors 2013.

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 information as required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- D. Specimen warranty.
- E. Samples: Submit two samples of door construction, 8x8 inch (203x203 mm) in size cut from top corner of door.
- F. Samples: Submit two samples of door veneer, 8x8 inch (203x203 mm) in size illustrating wood grain, stain color, and sheen. Submit two samples of edgebanding, 6 inches (150 mm) in length illustrating color and pattern.
- G. Samples: Submit two samples of each glazing type, 6x6 inch (203x203 mm) in size.
- H. Manufacturer's Installation Instructions: Indicate special installation instructions.
- I. 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 not less than three years of documented experience.

1. Company with at least one project within 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-rating 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. 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. Basis of Design Manufacturer:
 1. Marshfield Door Systems, Inc; Product - "Aspiro Series": www.marshfielddoors.com.
- B. Other Approved Manufacturers:
 1. Graham Wood Doors: www.grahamdoors.com.
 2. Algoma Hardwoods, Inc: www.algomahardwoods.com.
 3. Oshkosh Architectural Door Co: www.oshkoshdoor.com.
 4. Eggers Industries: www.eggersindustries.com.
 5. VT Industries: www.vtindustries.com.
 6. Substitutions: See Section 01 6000 - Product Requirements.

2.02 DOORS

- A. Doors: Refer to drawings for locations and additional requirements.
 1. Quality Standard: Custom Grade, Heavy Duty performance, in accordance with WDMA I.S. 1A.
 2. Wood Veneer Faced Doors: 5-ply.
 3. Glazed Lights: Factory glazed; sizes and configurations as indicated on drawings.
- B. Interior Doors: 1-3/4 inches (44 mm) 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 International Building Code ("positive pressure"), UL or WH (ITS) labeled without any visible seals when door is open.
 3. Wood veneer facing for field transparent finish as indicated on drawings.

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.
- B. Fire-Rated Doors: Mineral core type, with fire resistant composite core (FD), plies and faces as indicated above; with core blocking as required to provide adequate anchorage of hardware without through-bolting.
- C. Sound-Rated Doors: Equivalent to type, with particleboard core (PC) construction as required to achieve STC rating specified; plies and faces as indicated above.

2.04 DOOR FACINGS

- A. Wood Veneer Facing for Transparent Finish: White Maple, premium veneer grade as specified by quality standard, plain sliced, book veneer match, running assembly match.
 - 1. Vertical Edges: 1/8 inch (3 mm) PVC edgebanding matching wood veneer color to be approved by Architect.
 - 2. "Pair Match" each pair of doors; "Set Match" pairs of doors within 10 feet (3 m) of each other when doors are closed.
- B. Facing Adhesive: Type I - waterproof.

2.05 ACCESSORIES

- A. Glazing Stops:
 - 1. Non-Rated and 20 Minute: Flush, wood of same species as door facing.
 - a. Profile: Marshfield Type W-6.
 - 2. Fire-Rated 45 Minute or Above: Flush, wood veneer clad PVC, of same species of door facing.
- B. Glazing Types: Refer to Section 08 8000 - Glazing and Drawings for types required.
- C. Astragals for Non-Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge.
- D. Astragals for Fire Rated Double Doors: Steel, T shaped, overlapping and recessed at face edge, specifically for double doors.

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 and top of door for closer for hardware reinforcement.
 - 2. Provide solid blocking for other through-bolted hardware.
- C. Where supplementary protective edge trim is required, install trim after veneer facing has been applied full-width.
- D. Factory machine doors for hardware other than surface-mounted hardware, in accordance with hardware requirements and dimensions.
- E. Factory fit doors for frame opening dimensions identified on shop drawings, with edge clearances in accordance with specified quality standard.
- F. Provide edge clearances in accordance with the quality standard specified.

2.07 FACTORY FINISHING - WOOD VENEER DOORS

- A. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
 - 1. Transparent:
 - a. System - 11 Polyurethane Catalyzed.
 - 1) AWI Section 1500, System TR-6 may also be used.
 - b. Stain: As selected by Architect.
 - c. Sheen: Satin.
- B. Finish work in accordance with WDMA I.S. 1A for grade specified and as follows:
- C. Factory finish stained doors in accordance with approved sample.
- D. Seal door top edge with color sealer to match door facing.

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. Factory-Finished Doors: Do not field cut or trim; if fit or clearance is not correct, replace door.
- C. Use machine tools to cut or drill for hardware.
- D. Coordinate installation of doors with installation of frames and hardware.
- E. Install door louvers plumb and level.

3.03 TOLERANCES

- A. Comply with specified quality standard for fit and clearance tolerances.
- B. Comply with 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- REFER TO OPENING SCHEDULE ON DRAWINGS.

END OF SECTION

**SECTION 08 3100
ACCESS DOORS AND PANELS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Ceiling access door and frame units.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Carpentry: Openings in partitions.
- B. Section 07 4616 - Aluminum Siding: Openings in ceilings.
- C. Section 09 9000 - Field paint finish.

1.03 REFERENCE STANDARDS

- A. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.

1.04 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 each access door and/or panel unit.
- D. Manufacturer's Installation Instructions: Indicate installation requirements.

PART 2 PRODUCTS

2.01 WALL AND CEILING MOUNTED UNITS

- A. Manufacturers:
 - 1. ACUDOR Products Inc: www.acudor.com/#sle.
 - a. Ceiling-Mounted Units: ACUDOR GFRG - R.
 - 2. Babcock-Davis; []: www.babcockdavis.com/#sle.
 - 3. Milcor, Inc; []: www.milcorinc.com/#sle.
 - 4. Nystrom, Inc; []: www.nystrom.com/#sle.
- B. Wall and Ceiling Mounted Units: Factory fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
 - 1. Material: Steel.
 - 2. Style: Exposed frame with door surface flush with frame surface.
 - 3. Door Style: Single thickness with rolled or turned in edges.
 - 4. Heavy Duty Frames: 14 gage, 0.0747 inch (1.89 mm), minimum thickness.
 - 5. Single Steel Sheet Door Panels: 1/16 inch (1.6 mm), minimum thickness.
 - 6. Steel Finish: Primed.
 - 7. Door/Panel Size: 24" x 36".
 - 8. Hardware:
 - a. Hinges for Non-Fire-Rated Units: Concealed, constant force closure spring type.
 - b. Latch/Lock: Cylinder lock-operated cam latch, two keys for each unit.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that rough openings are correctly sized and located.
- B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

- A. Clean surfaces thoroughly prior to proceeding with this work.

- B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.

3.03 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install frames plumb and level in openings, and secure units rigidly in place.
- C. Position units to provide convenient access to concealed equipment when necessary.

END OF SECTION

**SECTION 08 4000
ALUMINUM STOREFRONT AND CURTAINWALL**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, services necessary to complete the fabrication and installation of all new aluminum storefront, curtain wall windows, entrances, doors, and hardware as shown on the drawings or specified herein, including, but not limited to, the following:
- C. Extruded aluminum curtain wall and storefront members, including assemblies and frames for aluminum entrance doors and windows.
- D. Aluminum entrance doors.
- E. Coordinate with Section 08 7000 - Finish Hardware for preparation and installation of hardware components.
- F. All aluminum stops and vinyl glazing beads.
- G. Furnish all necessary anchors.
- H. Furnish and install caulking at both sides of all aluminum door or window jambs, heads and sills. Provide custom color caulk to match adjacent surface at exposed intersections with concrete tilt-up or masonry. Follow requirements of Section 07 9000 - Caulking and Sealants.
- I. Furnish and install all required miscellaneous aluminum break metal trim.
- J. Clean-up and disposal of debris as a result of this Work.
- K. Aluminum doors and frames.
- L. Weatherstripping.

1.02 RELATED REQUIREMENTS

- A. Section 07 9000 - Caulking and Sealants
- B. Section 08 1000 - Hollow Metal Doors and Door and Window Frames
- C. Section 08 7000 - Finish Hardware
- D. Section 08 8000 - Glazing: Glass and glazing accessories.

1.03 REFERENCE STANDARDS

- A. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site 2015.
- B. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems 2015.
- C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document) 2015.
- D. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2014 (2015 Errata).
- E. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections 2009.
- F. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures Most Recent Edition Cited by Referring Code or Reference Standard.
- G. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2014.
- H. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- I. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.
- J. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.

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- K. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2004 (Reapproved 2012).
- L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference 2014.
- M. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference 2000 (Reapproved 2016).
- N. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).

1.04 SUBMITTALS

- A. Submit following the requirements of Section 01 3300 - Submittals
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, internal drainage details and [_____].
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related Work, expansion and contraction joint location and details, and field welding required.
- D. Samples: Submit samples of storefront and entrance door sections including metal finishes, corner and intersection joint construction, reglets, glass stops, fasteners and accessories.
- E. Manufacturer's Certificate: Certify that the products supplied meet or exceed the specified requirements.

1.05 QUALITY ASSURANCE

- A. Obtain each type of storefront and curtain wall system and all of the components, including doors, through one source from a single manufacturer.
- B. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle products of this section in accordance with AAMA CW-10.
- B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.07 FIELD CONDITIONS

- A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

1.08 WARRANTY

- A. Deliver a written guarantee to Owner covering the prompt repair or replacement of any defective work provided under this Section, at no cost to Owner, for a period of one (1) year after effective date of Substantial Completion, except five (5) years for caulking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Drawings and specifications are based on products manufactured by:
 - 1. Kawneer North America Co.: www.kawneer.com
- B. In addition to the manufacturer listed above the following have been approved to bid this project:
 - 1. Arcadia, Inc.: www.arcadiainc.com
 - 2. EFCO Corporation: www.efcocorp.com.
 - 3. Manko Window Systems, Inc; [_____]: www.mankowindows.com.
 - 4. Oldcastle BuildingEnvelope: www.oldcastlebe.com.

5. Tubelite, Inc: www.tubeliteinc.com.
6. United States Aluminum Corp: www.usalum.com.
7. Other Storefront and Curtainwall Manufacturers desiring to bid may do so by following the requirements of Section 00 4325 - Product Substitutions

2.02 STOREFRONT AND CURTAIN WALL SYSTEMS

A. General Description

1. Provide aluminum entrance, storefront and curtain wall and window systems capable of withstanding loads, thermal, and structural movement requirements indicated without failure, based on testing manufacturer's standard units in assemblies indicated. Failure is defined as follows:
 - a. Air infiltration and water penetration exceeding limits specified.
 - b. Framing members transferring stresses to glazing units, including those caused by thermal and structural movement.
2. Dimensional Tolerances: Provide storefront and curtain wall systems that accommodate dimensional tolerances of building frame and other adjacent construction.
3. Glazing: Physically and thermally isolate glazing from framing members.

B. Performance Requirements:

1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
 - a. Design Wind Loads: Comply with requirements of ASCE 7.
 - b. Member Deflection: Limit member deflection to 1/175 in any direction, with full recovery of glazing materials.
2. Static-Pressure Test Performance: Provide storefront and curtain wall systems that do not evidence material failures, structural distress, failure of operating components to function normally, or permanent deformation of main framing members exceeding 0.2% of clear span when tested in accordance with ASTM E 330.
 - a. Test Pressure: One hundred and fifty percent (150%) of inward and outward wind-load design pressures.
 - b. Duration: As required by design wind velocity, fastest one (1) mile (1.609 km) of wind for relevant exposure category.
3. Structural-Support Movement: Provide storefront and curtain wall systems that accommodate structural movements including, but not limited to, sway and deflection.
4. Seismic Loads: Provide storefront and curtain wall systems, including anchorage, capable of withstanding the effects of earthquake motions calculated according to requirements of the American Society of Civil Engineers' ASCE 7 "Minimum Design Loads for Buildings and Other Structures", Section 9 "Earthquake Loads", or authorities having jurisdiction, whichever are more stringent.
5. Dead Loads: Provide entrance and storefront and curtain wall system members that do not deflect an amount which will reduce glazing bite below seventy-five percent (75%) of design dimension when carrying full dead load.
6. Live Loads: Provide entrance and storefront and curtain wall systems, including anchorage, that accommodate the supporting structures' deflection from uniformly distributed and concentrated live loads indicated without failure of materials or permanent deformation.
7. Water Penetration Resistance: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 6.24 psf (299 Pa).
 - a. Water leakage is defined as uncontrolled water infiltrating systems or appearing on systems' normally exposed interior surfaces from sources other than condensation. Water controlled by flashing and gutters that is drained back to the exterior and cannot damage adjacent materials or finishes is not water leakage.
8. Air Leakage: Maximum of 0.06 cu ft/min sq ft (0.3 L/sec sq m) of wall area, when tested in accordance with ASTM E283 at 6.27 psf (300 Pa) pressure differential across assembly.
9. Thermal Movements: Provide entrance and storefront and curtain wall systems, including anchorage, that accommodate thermal movements of systems and supporting elements

resulting from the following maximum range in ambient and surface temperatures without buckling, damaging stresses on glazing, failure of joint sealants, damaging loads on fasteners, failure of doors or other operating units to function properly, and other detrimental effects.

- a. Temperature Range: One hundred and twenty degrees (120°) F (67 degrees C), ambient; one hundred and eighty degrees (180°) F (100 degrees C), material surfaces.
10. Average Thermal Conductance: Provide storefront and curtain wall systems with average U-values of not more than 0.63 Btu/sq. ft. x h x deg F (3.57 W/sq. m x K) when tested according to AAMA 1503.1.

2.03 COMPONENTS

- A. Storefront Framing:
 1. Exterior windows and framing indicated to be "storefront" shall be Kawneer "Tri-Fab VG 451-T" Series (or equal) set up for 1" insulated glazing (center).
 - a. Kawneer Isolock Thermal Break with a 1/4" separation consisting of a two part chemically cured, high density polyurethane which is mechanically and adhesively joined to aluminum storefront sections.
 - b. Thermal break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.
 2. Interior windows and framing indicated to be "storefront" shall be Kawneer "Tri-Fab VG 450" Series (or equal) set up for 1/4" glazing (center).
 3. Profile: 2" x 4-1/2", weatherseal glazed.
- B. Curtain Wall Framing:
 1. Provide all labor, materials, tools, equipment, and services to furnish and install aluminum curtain wall and related components as shown on the drawings for the following.
 - a. Kawneer 1600 LR
 - 1) Wall System - 5 3/4" x 2-1/2"
- C. Glazing: As specified in Section 08 8000.
 1. Glazing materials shall be compatible with aluminum and those sealants and sealing materials used in composite structure which have direct contact with the gasket.
 2. Standard exterior and interior glazing gaskets shall be a dry glazed elastomer in accordance with ASTM C5609-91
 3. Interior air sealants shall be silicone and shall meet AAMA 802.5-92 (Type II).
 4. Glazing beads shall be extruded aluminum and shall be a minimum thickness of .050" (1.3).
- D. Doors: Shall be Kawneer 500 Heavy Wall Wide Stile Series.
 1. Material standard: ASTM B 221 6063 - T5 alloy temper.
 - a. Major portions of the Door members to be .188" nominal in thickness and glazing mouldings to be .050" thick.
 2. Thickness: 2 inches (50 mm).
 3. Top Rail: 5 inches (127 mm) wide.
 4. Vertical Stiles: 5 inches (127 mm) wide.
 5. Intermediate Rail: 8 1/4" (209.55 mm) wide.
 6. Bottom Rail: 10 inches (254 mm) wide.
 7. Glazing Stops: Square.
 8. Finish: Same as storefront and curtainwall.
 9. All exterior doors to be prepared for 1" glazing and all interior doors to be prepared for 1/4" glazing.
 - a. Glazing gaskets shall be either EPDM elastomeric extrusions or a thermoplastic elastomer.

2.04 MATERIALS

- A. Material standard: Extruded aluminum, ASTM B 221, 6063- T5 alloy and temper.
- B. Fasteners

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1. Fasteners, where exposed, shall be 300 Series stainless steel.
 2. Perimeter anchors shall be aluminum or steel, providing the steel is properly separated from the aluminum to prevent galvanic action.
- C. Gaskets: Glazing gaskets shall be extruded EPDM rubber.
- D. Glazing Accessories: As specified in Section 08 8000.

2.05 FINISHES

- A. All exposed framing surfaces shall be free of scratches and other serious blemishes.
- B. Class I Natural Anodized Finish: AAMA 611AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

2.06 HARDWARE

- A. Typical hardware for aluminum entrances as listed below shall be by this contractor, balance of hardware shall be as specified in Section 08 7000 - Finish Hardware.
1. Pulls shall be through bolted at all aluminum Heavy Wall doors.
 2. Provide stabilizers at all single exterior aluminum doors.

Abbreviations

3. MK - McKinney
4. PE - Pemko
5. RO - Rockwood
6. SA - Sargent
7. SU - Securitron
8. HS - HES
9. RF - Rixson
10. DO - Dorma Door Controls Inc
11. SH - Schlage
12. VD - Von Durpin
13. LC - LCN

SET 1.0**3.0 DOUBLE DOORS - ALUMINUM - AUTO OPENER - KEYLESS**

2	Continuous Hinge	CFM SLF-HD1		PE
2	Door Pull	RM 221 1 x HD	630	RO
1	Threshold	1715A	US26D	PE
2	Gasketing	2891APK (Head)	US26D	PE
4	Gasketing	303AV (Jambs)	US26D	PE
1	Gasketing	5110BL (mullion)	US26D	PE
2	Sweep	3452CNB	US26D	PE
1	Card Reader	provided by access control		
1	Power Supply	provided by access control		

Balance of Hardware furnished by 08 7000

Note: Coordination required for door operator and card access use.

Prep one leaf for cylinder lock.

SET 2.0**3.0 DOUBLE DOORS - ALUMINUM - VESTIBULE**

2	Continuous Hinge	CFM SLF-HD1		PE
2	Door Pull	RM 221 1 x HD	630	RO

1	Threshold	1715A	US26D	PE
2	Gasketing	2891APK (Head)	US26D	PE
4	Gasketing	303AV (Jambs)	US26D	PE
1	Gasketing	5110BL (mullion)	US26D	PE
2	Sweep	3452CNB	US26D	PE
1	Power Supply	provided by access control		

Balance of Hardware furnished by 08 7000

Note: Coordination required for door operator.

SET 3.0

4.0 DOORS - ALUMINUM - AUTO OPENER - KEYLESS

1	Continuous Hinge	CFM SLF-HD1		PE
1	Door Pull	RM 221 1 x HD	630	RO
1	Threshold	1715A	US26D	PE
1	Gasketing	2891APK (Head)	US26D	PE
2	Gasketing	303AV (Jambs)	US26D	PE
1	Sweep	3452CNB	US26D	PE
1	Card Reader	provided by access control		
1	Power Supply	provided by access control		

Balance of Hardware furnished by 08 7000

SET 4.0

4.0 DOOR - ALUMINUM - VESTIBULE

1	Continuous Hinge	CFM SLF-HD1		PE
1	Door Pull	RM 221 1 x HD	630	RO
1	Gasketing	2891APK (Head)	US26D	PE
2	Gasketing	303AV (Jambs)	US26D	PE
1	Sweep	3452CNB	US26D	PE

Balance of Hardware furnished by 08 7000

NOTE: COORDINATION REQUIRED FOR DOOR OPERATOR

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Install wall system in accordance with manufacturer's instructions.
- B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- C. Provide alignment attachments and shims to permanently fasten system to building structure.
- D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
- E. Provide thermal isolation where components penetrate or disrupt building insulation.
- F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.

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- G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
- H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
- I. Caulking:
 - 1. Provide caulking as indicated or required to make work of this Section weathertight and properly finished, including joint between frames and adjoining construction. Conform to Section 07 9000 - Caulking and Sealants, including guarantee. Color as selected by Architect.
 - 2. Fill entire area under thresholds with caulking.
- J. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 ADJUSTING

- A. Adjust operating hardware and sash for smooth operation.

3.04 CLEANING

- A. Remove protective material from pre-finished aluminum surfaces.
- B. As pertains to work of this Section, at frequent intervals during and again upon completion of work remove from building and site disused tools and equipment, surplus materials, rubbish, debris, dust, and dirt and leave areas affected by work of this Section in clean condition.

END OF SECTION

**SECTION 08 4500
TRANSLUCENT SKYROOF**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Sandwich panels of translucent skins separated with an aluminum grid.
 - 1. Provide all required components for complete installation including, but not limited to aluminum flashings, fasteners, etc.
- C. Clean-up and removal of debris as a result of this Work.

1.02 RELATED REQUIREMENTS

- A. Section 05 1000 - Structural Steel
- B. Section 07 5400 - Flexible Sheet Roofing
- C. Section 07 6200 - Flashing and Sheet Metal
- D. Section 08 8000 - Glazing.

1.03 REFERENCE STANDARDS

- A. AA DAF-45 - Designation System for Aluminum Finishes 2003 (Reaffirmed 2009).
- B. AAMA CW-DG-1 - Aluminum Curtain Wall Design Guide Manual 1996, with Editorial Revision (2005).
- C. AAMA CW-10 - Care and Handling of Architectural Aluminum From Shop to Site 2015.
- D. AAMA 501.1 - Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure 2017.
- E. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems 2015.
- F. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2014 (2015 Errata).
- G. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections 2009.
- H. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2017a.
- I. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate 2014.
- J. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) 2014.
- K. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2020.
- L. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2013.
- M. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen 2004 (Reapproved 2012).
- N. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference 2014.
- O. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference 2000 (Reapproved 2016).
- P. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Difference 2000 (Reapproved 2016).

- Q. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference 2015.
- R. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic") 2002 (Ed. 2004).

1.04 SUBMITTALS

- A. Provide submittals in accordance with requirements of Section 01 3300 - Submittals
- B. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, panel configuration, internal drainage details and [_____].
- C. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.
 - 1. Shop drawings to be reviewed and stamped by a registered Engineer if required.
- D. Samples: Submit product sample showing thickness, face sheets, colors and insulation 14" x 28".
- E. Test Reports: To be furnished by systems manufacturer in accordance with Division 1 - General Requirements, 01 33 00, "Submittals." The manufacturer shall submit certified test reports by an independent testing organization for each type and class of panel system. Reports shall verify that the material will meet all performance requirements of this specification. Previously completed test reports will be acceptable if by current manufacturer and indicative of products used on this project. Test reports required are:
 - 1. Flame Spread and Smoke Developed (ASTM E-84 by UL 723).
 - 2. Burn Extent (ASTM D-635).
 - 3. Color Difference (ASTM D-2244).
 - 4. Impact Strength (UL 972).
 - 5. Tensile Bond Strength (ASTM C-297 after aging by ASTM D-1037).
 - 6. Shear Bond Strength (ASTM D-1002) after five (5) different aging conditions.
 - 7. Beam Bending Strength (ASTM E-72).
 - 8. Insulation "U" Factor (by NFRC 100; ASTM C-236; E-1423 and C-1199).
 - 9. NFRC Certification.
 - 10. Condensation Resistance Factor (AAMA 1503).
 - 11. Class A Roof Covering Burning Brand (ASTM E-108).
 - 12. Performance for Windows (AAMA/NWWDA 101/I.S.2).
 - 13. Erosion Test ASTM D4060.
- F. Proof of regular, independent quality control monitoring under a nationally recognized building code review and listing program including ICBO shall be submitted.
- G. Complete energy and structural calculations and all above data must be submitted with any request to be included as an approved product to bid this Section.
- H. Installation Data: Special installation requirements.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: System manufacturer must be listed by a recognized building code authority, including the International Conference of Building Officials, which requires quality control inspections, and fire, structural and water infiltration testing by an approved agency for sandwich panel systems.
 - 1. Quality control inspections; and required testing conducted at least once each year, shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with "Acceptance Criteria for Sandwich Panels" as regulated by the ICBO-ES or equivalent.
 - 2. A company continuously and regularly employed in the manufacture of specified materials for a period of at least ten (10) consecutive years and which can show evidence of these materials being satisfactorily used on at least six (6) projects of similar size, scope and

type within such a period. At least three (3) projects shall have been in successful use for ten (10) years or longer.

3. The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.
- B. Installer Qualifications: Erection shall be by an installer who has been in the business of erecting and installing specified materials for at least five (5) consecutive years, and can show evidence of satisfactory completion of projects of similar size, scope and type.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Handle work of this section in accordance with AAMA CW-10.
- B. Protect prefinished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather. Puncture wrappings at ends for ventilation.
- C. Panels should be shipped to the job site in rugged shipping units, ready for erection.
- D. Follow manufacturer's storage and handling instructions.

1.07 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions in system installation areas and indicate if dimensions on shop drawings are actual or guaranteed dimensions.

1.08 WARRANTY

- A. General Warranty: Any warranties specified in this Section shall not alter or change Owner's rights and provisions received under other Contract Documents, and shall be in addition to those documents.
- B. Special Warranty: System manufacturer shall provide written agreement to repair or replace all defective panel and system craftsmanship for a period of one (1) year, starting at date of Substantial Completion. Installer shall provide a one (1) year warranty against leakage starting from date of Substantial Completion.
- C. Additional warranty shall be for twenty-five (25) years against fiber exposure, covered by the face sheet manufacturer, non-pro-rata.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Insulated translucent fiberglass sandwich panel system for walls or skylights consisting of 2-3/4" thick flat factory -built panels prefabricated into single units, including installation..
 1. Translucent panels in self-supporting grid roof system. Support system to be concealed within roof system (unless noted otherwise).
 2. Center ridge type in size as shown on the drawings.
 3. Drawings indicate size, dimensions and profile to structural translucent panel system. Specifications indicate performance required.
- B. Other Acceptable Sandwich Panel Wall/Roof System Manufacturers:
 1. Basis of Design: Kalwall, www.kalwall.com
 2. Substitutions: Follow requirements of Section 00 4325 - Product Substitutions.

2.02 PERFORMANCE REQUIREMENTS

- A. System Design: Design and size components to withstand dead loads and live loads caused by snow, hail, and positive and negative wind loads acting on plane of panel without damage or permanent set.
 1. Wind Load: Twenty-five (25) lbs. /sq. ft.
 2. Snow Load: Thirty (30) lbs. /sq. ft.
- B. Deflection of entire system shall be no more than L/45, unless otherwise indicated.
- C. Air/Water Infiltration: For Water Penetration, curtainwall system shall be tested per procedures of ASTM E-331, and shall show no water entry at WTP=10.00 psf, @ 5.00gph/ft. squared. Test

shall be performed before and after uniform loads are applied. For Air Leakage, system shall be tested per procedures of ASTM E-283, and shall show results of no more than 0.01 cfm/ft. squared @ 1.56 psf (twenty-five (25) mph) and 0.01 cfm/ft, squared @ 6.24 psf (fifty (50) mph).

- D. Thermal insulation: Panels shall have a NFRC laboratory tested "U" factor of .23 thermally broken - flat only by ASTM C-236, E-1423 and C-1199. System shall be NFRC certified.
- E. Light & solar transmission: Panels shall have a light transmission of twenty percent (20%) and solar heat gain coefficient of .23 for roof and .19 for wall per ASTM E-972.

2.03 MATERIALS

2.04 COMPONENTS

- A. Translucent Wall and Roof System: Structurally reinforced translucent panels, with self supporting framing, shop fabricated, factory prefinished, battens, cap strips, related flashings, anchorage and attachment devices.
- B. Panels: Bonded to both sides of structural extruded aluminum grid of indicated pattern; exposed surfaces of exterior sheet chemically and permanently treated to protect against surface erosion and extreme weather conditions; exposed surface of interior sheets fire retardant to a flame rating of 50 and smoke rating of 250; polyvinyl fluoride film coated:
- C. Grid Core:
 - 1. Grid pattern shall be nominal 12" x 24" shoji and symmetrical about the horizontal center-line for each flat panel.
 - 2. The thermally broken I-beam grid core shall be 6063-T6 or 6005-T5 with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16". The I-beam grid shall be machined to tolerances of not greater than +/- .002". Thermal break shall be 1" wide minimum.
 - a. Panels shall withstand twelve hundred degrees (1200°) F fire for minimum one (1) hour without collapse or exterior flaming.
 - b. Thermally broken panels shall give minimum CRF (Condensation Resistance Factor) of 80 by AAMA 1503 measured on the grid line.
- D. Battens, Cover Strips, Cover Plates, and Integral Flashings: Extruded aluminum, to suit location and application; sized to rigidly retain panels in place.

2.05 FABRICATION

- A. Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling 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 ensure concealment from view.
- E. Reinforce framing members for external imposed loads.
- F. Panels shall be pre-assembled where practical and sealed at the factory.

2.06 FINISHES

- A. Finishes shall be selected by Architect from manufacturer's full range of options.
- B. Finish Coatings: Conform to AAMA 611.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify dimensions, tolerances, and method of attachment with other work.
- B. Verify wall openings and adjoining air barrier and vapor retarder materials are ready to receive work of this section.

3.02 INSTALLATION

- A. Do not install systems until conditions adversely affecting installation and performance have been corrected.

- B. Install translucent panel system in accordance with manufacturer instructions. Install cellular panels with cells vertical.
- C. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
- D. Provide alignment attachments and shims to permanently fasten system to building structure.
- E. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

3.03 FIELD QUALITY CONTROL

- A. After other trades have completed work on adjacent material, inspect translucent panel installation and make any adjustments necessary to ensure proper installation and weather-tight conditions.
- B. Replace curtain wall components that have failed field testing and retest until performance is satisfactory.

3.04 ADJUSTING

- A. Adjust operating sash for smooth operation.

3.05 CLEANING

- A. Remove protective material from prefinished aluminum surfaces.
- B. Clean panel system, both sides, after installation according to manufacturer's recommendations.

3.06 PROTECTION

- A. Protect finished work from damage until Date of Substantial Completion.

END OF SECTION

**SECTION 08 7000
FINISH HARDWARE**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 - Specification Sections, apply to this Section.
- B. Furnishing all items (except those items which are specifically excluded from this section, or of unique hardware specified elsewhere) of finish door hardware as hereinafter specified or obviously necessary for all swinging, sliding, folding and other doors.
- C. This Section includes furnishing and installation of commercial door hardware for the following:
 - 1. Swinging doors.
 - 2. Other doors to the extent indicated.
- D. Door hardware includes, but is not necessarily limited to, the following:
 - 1. Mechanical door hardware.
 - 2. Automatic operators.
 - 3. Cylinders specified for doors in other sections.

1.02 RELATED WORK

- A. Section 06 1000 - Rough Carpentry
- B. Section 08 1000 - Hollow Metal Doors and Door and Window Frames
- C. Section 08 1416 - Flush Wood Doors
- D. Section 08 4000 - Aluminum Storefronts and Curtain Wall
- E. Section 08 8000 - Glass and Glazing
- F. Section 09 9000 - Painting
- G. Division 28 -, Electronic Safety and Security
- H. Hardware for the following items shall be furnished by others as a separate part of this Specification.
 - 1. Cabinet Hardware, Section 06 4000 - Prefinished Cabinets and Trim
 - 2. Preparation by hollow metal fabricator Section 08 1000 - Hollow Metal Doors and Door and Window Frames
 - 3. Preparation by aluminum storefront contractor Section 08 4000 - Aluminum Storefront and Curtain Wall
 - 4. Temporary construction door locks/cylinders shall be provided by the General Contractor. Two (2) temporary construction keys will be given to the owner for access during construction.

1.03 REFERENCE STANDARDS:

- A. Comply with the version year adopted by the Authority Having Jurisdiction.
- B. ANSI A117.1 – Accessible and Usable Buildings and Facilities.
- C. ANSI/SDI A250.13 - Testing and Rating of Severe Windstorm Resistant Components for Swing Door Assemblies.
- D. ASTM E1886 - Test Method for Performance of Exterior Windows, Curtin Walls, Doors and Shutters Impacted by Missiles and Exposed to Cyclic Pressure Differentials.
- E. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure difference.
- F. ASTM E1996 - Standard specification for performance of exterior windows, curtain walls, doors and storm shutters impacted by Windborne Debris in Hurricanes.
- G. FEMA 361 2008 - Design and Construction Guidance for Community Safe Rooms.
- H. ICC 500 - ICC/NSSA Standard for the Design and Construction of Storm Shelters.

- I. ICC/IBC - International Building Code.
- J. NFPA 70 - National Electrical Code.
- K. NFPA 80 - Fire Doors and Windows.
- L. NFPA 101 - Life Safety Code.
- M. NFPA 105 - Installation of Smoke Door Assemblies.
- N. TAS-201-94 - Impact Test Procedures.
- O. TAS-202-94 - Criteria for Testing Impact and Non-Impact Resistant Building Envelope Components using Uniform Static Air Pressure.
- P. TAS-203-94 - Criteria for Testing Products Subject to Cyclic Wind Pressure Loading.
- Q. Building Codes, Local Amendments.
- R. Standards: All hardware specified herein shall comply with the following industry standards:
 - 1. ANSI/BHMA Certified Product Standards - A156 Series
 - 2. UL10C – Positive Pressure Fire Tests of Door Assemblies
 - 3. ADA – Americans with Disabilities Act

1.04 SUBMITTALS

- A. General Requirements.
 - 1. Submit copies of finish hardware schedule in accordance with Division 1 - General Requirements.
- B. Schedule And Product Data.
 - 1. Schedules to be in vertical format, listing each door opening, and organized into "hardware sets:" indicating complete designations of every item required for each door opening to function as intended. Hardware schedule shall be submitted within two (2) weeks from date the purchase order is received by the hardware supplier. Furnish four (4) copies of revised schedules after approval for field and file use. Note any special mounting instructions or requirements with the hardware schedule. Schedules to include the following:
 - a. Location of each hardware set cross-referenced on drawings, both on floor plans and in door and frame schedule.
 - b. Handing and degree of swing of each door.
 - c. Door frame sizes and materials.
 - d. Keying Information.
 - e. Type, style, function, size and finish of each hardware item.
 - f. Elevation drawings and operational descriptions for all electronic openings.
 - g. Name and manufacturer of each hardware item.
 - h. Fastenings and other pertinent information.
 - i. Explanation of all abbreviations, symbols and codes contained in schedule.
 - j. Mounting locations for hardware when varies from standard.
 - 2. Submit catalog cuts and or product data sheets for all scheduled finish hardware.
- C. Samples
 - 1. Upon request, samples of each type of hardware in finish indicated shall be submitted. Samples are to remain undamaged and in working condition through submittal and review process. Item will be returned to the supplier or incorporated into the work within limitations of keying coordination requirements.

1.05 QUALITY ASSURANCE

- A. Single Source Responsibility:
 - 1. Obtain all hardware (latch and lock sets, hinges, closers, etc.) from single supplier.
 - 2. Supplier Qualifications: A recognized architectural door supplier, with warehouse facilities in the project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this

project and that employs a full time and experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at a reasonable time during the course of work for consultation.

3. Hardware Manufacturers that are approved to furnish specified hardware:
 - a. Allegion
 - b. ASSA ABLOY
 - c. Other hardware suppliers may request prior approval in writing a minimum of seven (7) days prior to bid opening. If acceptable, they will be listed as an approved supplier in an Addendum.
4. General Contractors: The Owner requests that costs be provided for all three manufacturers' products, and reserves the option to select most appropriate system for the project. Use Section 00 1104.03 - RFP Schedule C to indicate costs from each manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.07 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.
- B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.
- C. Door and Frame Preparation: Related Division 8 - Sections (Steel and Aluminum) doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.08 WARRANTY

- A. General Warranty: Reference Division 1 - General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:
 1. Structural failures including excessive deflection, cracking, or breakage.
 2. Faulty operation of the hardware.
 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 4. Electrical component defects and failures within the systems operation.
- C. Standard Warranty Period: One (1) year from date of Substantial Completion, unless otherwise indicated.
- D. Special Warranty Periods:
 1. Ten (10) years for mortise locks and latches.
 2. Five (5) years for exit hardware.
 3. Ten (10) years for manual door closers.
 4. Two (2) years for electromechanical door hardware.

1.09 MAINTENANCE SERVICE

- A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.
- B. Continuing Service: Beginning at Substantial Completion, and running concurrent with the specified warranty period, provide continuous six (6) months full maintenance including repair and replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door opening operation. Provide parts and supplies as used in the manufacture and installation of original products.

1.10 KEYING INSTRUCTIONS

- A. The General Contractor will receive two (2) master keys to the building for use during construction. Both keys shall be returned to the Owner upon substantial completion. If both master keys for any reason are not returned to the Owner, the General Contractor will be held liable for the cost to re-key the entire building.

PART 2 - PRODUCTS

2.01 APPROVED DISTRIBUTORS/INSTALLERS

- A. Utah Hardware Distributors/Subcontractors that are approved as door and hardware distributors and/or installers to furnish all specified hardware.
 - 1. Architectural Building Supply, Salt Lake City, Utah
 - 2. Beacon Metal, Salt Lake City, Utah
 - 3. Robert I. Merrill, Salt Lake City, Utah
 - 4. Other hardware distributors/installers may request prior approval in writing a minimum of seven (7) days prior to bid opening. If acceptable, they will be listed as an approved distributor in an Addendum.
 - 5. Distributors/Installers: The Owner requests that costs be provided for all three manufacturers' listed in the Quality Assurance paragraph of this specification, and reserves the option to select most appropriate system for the project. This cost information is to be conveyed to the General Contractors for inclusion in the RFP. Refer to Section 00 1104.03 - RFP Schedule C

2.02 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
 - 1. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
 - a. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
- B. Products furnished, and installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.
 - 1. Permanent cylinders, cores, and keys to be furnished by Owner – Contractor shall install.
 - 2. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01 – General Requirements, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.03 HANGING DEVICES

- A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.
 - 1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
 - a. Two (2) Hinges: For doors with heights up to 60".

- b. Three (3) Hinges: For doors with heights 61 to 90".
 - c. Four (4) Hinges: For doors with heights 91 to 120".
 - d. For doors with heights more than 120", provide four (4) hinges, plus one (1) hinge for every 30" of door height greater than 120".
 - e. Doors with widths greater than 3'-0" shall have four (4) hinges.
- 2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
 - a. Widths up to 3'0": 4-1/2" heavy weight as specified.
 - b. Sizes from 3'1" to 4'0": 5" heavy weight as specified.
- 3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
 - a. All doors: Heavy weight, non-ferrous, ball bearing hinges.
- 4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
 - a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
 - 1) Out-swinging exterior doors.
 - 2) Out-swinging access controlled doors.
- 5. Acceptable Manufacturers:
 - a. Hager
 - b. Ives
- B. Continuous Geared Hinges: ANSI/BHMA A156.26 certified continuous geared hinge with minimum 0.120" thick extruded 6060 T6 aluminum alloy hinge leaves and a minimum overall width of 4". Hinges are non-handed, reversible and fabricated to template screw locations. Provide concealed flush mount (with or without inset), full surface, or half surface, in standard and heavy duty models, as specified in the Hardware Sets. Concealed continuous hinges to be U.L. listed for use on up to and including ninety (90) minute rated door installations and U.L. listed for windstorm components where applicable. Factory cut hinges for door size and provide with removable service power transfer panel where indicated at electrified openings. All exterior and equipment room doors over 3'6" wide will have continuous hinges.
 - 1. Acceptable Manufacturers:
 - a. Select
 - b. Hager
 - c. McKinney

2.04 DOOR OPERATING TRIM

- A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified automatic, self-latching, and manual flush bolts and surface bolts. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately 6' from the floor. Furnish dust proof strikes for bottom bolts. Surface bolts to be minimum 8" in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
 - 1. Acceptable Manufacturers:
 - a. Ives
- B. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified below or in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
 - 1. Push/Pull Plates: Minimum .050 inch thick, 4" wide by 16" high, with square corners and beveled edges, secured with exposed screws unless otherwise indicated.
 - 2. Straight Pull Design: Minimum 1" round diameter stainless steel bar or tube stock pulls with 2-1/2" projection from face of door unless otherwise indicated.
 - 3. Offset Pull Design: Minimum 1" round diameter stainless steel bar or tube stock pulls with 2-1/2" projection and offset of ninety (90°) degrees unless otherwise indicated.

4. Push Bars: Minimum 1" round diameter horizontal push bars with minimum clearance of 2-1/2" projection from face of door unless otherwise indicated.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
6. Acceptable Manufacturers:
 - a. Ives
 - b. Rockwood

2.05 MECHANICAL LOCKS AND LATCHING DEVICES

- A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified mortise locksets furnished in the functions as specified in the Hardware Sets. Locksets to be manufactured with a corrosion resistant, stamped twelve (12)ga. minimum formed steel case and be field-reversible for handing without disassembly of the lock body. Lockset trim (including knobs, levers, escutcheons, roses) to be the product of a single manufacturer. Furnish with standard 2-3/4" backset, 3/4" throw anti-friction stainless steel latchbolt, and a full 1" throw stainless steel bolt for deadbolt functions.
 1. Acceptable Manufacturers:
 - a. Sargent - 8200 Series LNL
 - b. Schlage - L9000 Series
- B. Lock Trim Design: As specified in Hardware Sets.

2.06 AUXILIARY LOCKS

- A. Mortise Deadlocks, Large Case: ANSI/BHMA A156.13, Series 1000, Grade 1, certified large case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. One piece stainless steel bolts with a 1" throw. Deadlocks to be products of the same source manufacturer and keyway as other locksets.
 1. Acceptable Manufacturers:
 - a. Sargent - 4000 Series
 - b. Schlage - L460 Series

2.07 LOCK AND LATCH STRIKES

- A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:
 1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
 2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
 3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
- B. Standards: Comply with the following:
 1. Strikes for Mortise Locks and Latches: BHMA A156.13
 2. Strikes for Bored Locks and Latches: BHMA A156.2
 3. Strikes for Auxiliary Deadlocks: BHMA A156.5
 4. Dustproof Strikes: BHMA A156.16

2.08 CONVENTIONAL EXIT DEVICES

- A. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Mounting rails to be formed from smooth stainless steel, brass or bronze architectural materials no less than 0.072" thick, with push rails a minimum of 0.062" thickness. Painted or aluminum metal rails are not acceptable. Exit device latch to be investment cast stainless steel, pullman type, with deadlatching feature, with flush end cap.
 1. Acceptable Manufacturers:
 - a. Sargent - 8500 / 8800 Series
 - b. Von Duprin - 33 / 98 / 99 Series

- B. Tube Steel Removable Mullions: ANSI/BHMA A156.3 removable steel mullions with malleable-iron top and bottom retainers and a primed paint finish. Provide keyed removable feature, stabilizers, and mounting brackets as specified in the Hardware Sets. At openings designed for severe wind load conditions due to hurricanes or tornadoes, provide manufacturers approved mullion and accessories to meet applicable state and local windstorm codes.

1. Acceptable Manufacturers:
 - a. Sargent - 980S Series with stabilizers
 - b. Von Duprin - 9954 with stabilizers

2.09 DOOR CLOSERS

- A. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide high impact, non-corrosive plastic covers standard. Closers will always be mounted on interior of building, adjusted to operate with 4# - 6# of force.

1. Acceptable Manufacturers:
 - a. LCN - 4040XP Series
 - b. Sargent - 281 Series

2.10 AUTOMATIC DOOR OPERATORS

- A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for compliance with UL 325. Coordinate operator mechanisms with door operation, hinges, and activation devices.
1. Fire-Rated Doors: Provide door operators for fire-rated door assemblies that comply with NFPA 80 for fire-rated door components and are listed and labeled by a qualified testing agency.
- B. Electromechanical Door Operators: Self-contained units powered by permanent magnet DC motor, with closing speed controlled mechanically by gear train, connections for power, activation and safety device wiring, and manual operation including spring closing when power is off.
- C. Electrohydraulic Door Operators: Self-contained low-pressure units with separate cylinders for power and checking, connections for power, activation, and safety device wiring and manual operation including spring closing when power is off.
- D. Brackets and Reinforcements: Manufacturer's standard, fabricated from aluminum with nonferrous shims for aligning system components.
- E. Standard: Certified ANSI/BHMA A156.19.
1. Performance Requirements:
 - a. Opening Force if Power Fails: Not more than 15 lbf required to release a latch if provided, not more than 30 lbf required to manually set door in motion, and not more than 15 lbf required to fully open door.
 - b. Entrapment Protection: Not more than 15 lbf required to prevent stopped door from closing or opening.
- F. Configuration: Surface mounted. Door operators to control single swinging and pair of swinging doors.
- G. Operation: Power opening and spring closing operation capable of meeting ANSI A117.1 accessibility guideline. Provide time delay for door to remain open before initiating closing cycle as required by ANSI/BHMA A156.19. When not in automatic mode, door operator to function as manual door closer with fully adjustable opening and closing forces, with or without electrical power.
1. On-off switch to control power to be key switch operated.
- H. Features: Operator units to have full feature adjustments for door opening and closing force and speed, backcheck, motor assist acceleration from 0 to 30 seconds, time delay, vestibule

interface delay, obstruction recycle, and hold open time from 0 up to 30 seconds.

- I. Provide outputs and relays on board the operator to allow for coordination of exit device latch retraction, electric strikes, magnetic locks, card readers, safety and motion sensors and specified auxiliary contacts.
- J. Activation Devices: Provide activation devices in accordance with ANSI/BHMA A156.19 standard, for condition of exposure indicated and for long term, maintenance free operation under normal traffic load operation. Coordinate activation control with electrified hardware and access control interfaces. Activation switches are standard SPST, with optional DPDT availability.
- K. Signage: As required by cited ANSI/BHMA A156.19 standard for the type of operator.
- L. Acceptable Manufacturers:
 - 1. Dorma ED900 - Low Energy Operator
 - 2. LCN - 4640 Electric Auto Equalizer
 - 3. Norton - 6000 X-in Series

2.11 ARCHITECTURAL TRIM

- A. Door Protective Trim
 - 1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
 - 2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
 - 3. Metal Protection Plates: ANSI/BHMA A156.6 certified metal protection plates (kick, armor, or mop), beveled on three edges (B3E), fabricated from the following:
 - a. Stainless Steel: .050-inch thick, with countersunk screw holes. (CSK)
 - 4. Fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets.
 - 5. Metal Door Edging: Door protection edging fabricated from a minimum .050-inch thick metal sheet, formed into an angle or "U" cap shapes, surface or mortised mounted onto edge of door. Provide appropriate leg overlap to account for protection plates as required. Height to be as specified in the Hardware Sets.
 - 6. Acceptable Manufacturers:
 - a. Hager
 - b. Ives
 - c. Rockwood
 - d. Trimco

2.12 DOOR STOPS AND HOLDERS

- A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.
- B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
- C. Any door swinging into a stud wall, cabinetry, shelves, etc., or as scheduled shall have floor stops. Doors opening against masonry concrete or door bollards may use wall stops.
- D. Acceptable Manufacturers:
 - 1. Hager
 - 2. Ives
 - 3. Rockwood
 - 4. Trimco

2.13 ARCHITECTURAL SEALS

- A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.
- B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.
 - 1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.
- C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.
 - 1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.
- D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated, based on testing according to ASTM E 1408.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Acceptable Manufacturers:
 - 1. Hager
 - 2. Pemko
 - 3. NGP

2.14 FABRICATION

- A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.15 FINISHES

- A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
- C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- D. Antimicrobial Finishes: Where specified, finishes on locksets, latchsets, exit devices and push/pull trim to incorporate an FDA recognized. Silver Ion, antimicrobial coating (MicroShield™) listed for use on equipment as a suppressant to the growth and spread of a broad range of bacteria, algae, fungus, mold and mildew.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.02 PREPARATION

- A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.03 INSTALLATION

- A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
 - 1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
- B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
 - 3. Provide blocking in drywall partitions where wall mounted hardware is located.
- C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
- D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."
- E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.04 FIELD QUALITY CONTROL

- A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.05 ADJUSTING

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.06 CLEANING AND PROTECTION

- A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.
- B. Clean adjacent surfaces soiled by door hardware installation.
- C. Clean operating items as necessary to restore proper finish. and provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.07 DEMONSTRATION

- A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.08 DOOR HARDWARE SCHEDULE

- A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper

application and functionality.

3.09 HARDWARE SCHEDULE

Abbreviations

1. MK - McKinney
2. PE - Pemko
3. RO - Rockwood
4. SA - Sargent
5. SU - Securitron
6. HS - HES
7. RF - Rixson
8. DO - Dorma Door Controls Inc
9. NO - Norton

SET: 1.0

Doors: 101/D1

3.0 DOUBLE DOORS - ALUMINUM - AUTO OPENER - KEYLESS

2	Exit Device	LC 8804 ETL	US32D	SA
1	Cylinder	Exit Device Cylinder	626	AA
1	Electric Strike	9600	630	HS
2	Door Closer	351 P10	EN	SA
1	Door Operator	ED900	689	DO
1	Keyed Removable Mullion	980S	PC	SA
2	Wall Stop	412 (463as required)	US26D	RO
1	Card Reader	provided by access control		
1	Power Supply	provided by access control		

BALANCE OF HARDWARE FURNISHED BY 08 4000

NOTE: COORDINATION REQUIRED FOR DOOR OPERATOR AND CARD ACCESS READER.

SET: 2.0

Doors: 101/D2

3.0 DOUBLE DOORS - ALUMINUM - VESTIBULE

2	Exit Device	LC 8804 ETL	US32D	SA
1	Cylinder	Exit Device Cylinder	626	AA
2	Door Closer	351 P10	EN	SA
1	Door Operator	ED900	689	DO
1	Keyed Removable Mullion	980S	PC	SA
2	Wall Stop	412 (463 as required)	US26D	RO
1	Power Supply	provided by access control		

BALANCE OF HARDWARE FURNISHED BY 08 4000

NOTE: COORDINATION REQUIRED FOR DOOR OPERATOR.

SET: 3.0

Doors: 107/D1

4.0 DOORS - ALUMINUM - AUTO OPENER - KEYLESS

1	Exit Device	LC 8804 ETL	US32D	SA
1	Cylinder	Exit Device Cylinder	626	AA
1	Electric Strike	9600	630	HS
1	Door Closer	351 P10	EN	SA

1	Card Reader	provided by access control		
1	Power Supply	provided by access control		

BALANCE OF HARDWARE PROVIDED BY 08 4000**NOTE: COORDINATION REQUIRED FOR DOOR OPERATOR AND CARD ACCESS READER****SET 4.0**

Doors 107/D2

4.0 DOORS - ALUMINUM - VESTIBULE

1	Exit Device	LC 8804 ETL	US32D	SA
1	Cylinder	Exit Device Cylinder	626	AA
1	Door Closer	351 P10	EN	SA

BALANCE OF HARDWARE PROVIDED BY 08 4000

NOTE: COORDINATION REQUIRED FOR DOOR OPERATOR

SET 5.0

Doors: 112/D1

3	Hinge	TA2314 x NRP	US32D	MK
1	Office Lock	LC 8256 LNL	US26D	SA
1	Cylinder	Lockset Cylinder	626	AA
1	Electric Strike	9600	630	HS
1	Door Closer	351 P10	EN	SA
1	Floor Stop	412 (463 as required)	US26D	RO
3	Silencer	608		RO
1	Card Reader	provided by access control		
1	Power Supply	provided by access control		

SET 6.0

Doors: 105/D1, 106/D1, 117/D1

3	Hinge	T4A3786	US26D	MK
1	Office Lock	LC 8256 LNL	US26D	SA
1	Cylinder	Lockset Cylinder (OFCI)	626	AA
1	Electric Strike	9600	630	HS
1	Wall Stop	412	US26D	RO
1	Silencer	608		RO
1	Card Reader	provided by access control		
1	Power Supply	provided by access control		

SET 7.0

Doors: 113/D1

3	Hinge	TA2714	US26D	MK
1	Office Lock	LC 8256 LNL	US26D	SA
1	Cylinder	Lockset Cylinder	626	AA
1	Wall Stop	412	US26D	RO
3	Silencer	608		RO

SET: 8.0

Doors: 111/D1

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SBSU - GUNNISON BRANCH GUNNISON, UT

3	Hinge	T4A3386 x NRP	US32D	MK
1	Storeroom Lock	LC 8204 LNL	US26D	SA
1	Cylinder	Lockset Cylinder	626	AA
1	Kick Plate	K1050 10"	US32D	RO
1	Wall Stop	412 (463 as required)	US32D	RO
3	Silencer	608		RO

SET: 9.0

Doors: 115/D1

3	Hinge	TA2314 x NRP	US32D	MK
1	Storeroom Lock	LC 8204 LNL	US26D	SA
1	Cylinder	Lockset Cylinder	626	AA
1	Electric Strike	9600	630	HS
1	Door Closer	351 P10	EN	SA
1	Wall Stop	412 (463 as required)	US26D	RO
1	Gasketing	PK55BL		PE
1	Card Reader	provided by access control		
1	Power Supply	provided by access control		

SET: 10.0

Doors: 109/D1, 110/D1

3	Hinge	TA2314 x NRP	US32D	MK
1	Privacy Set	49 8266 NL	US26D	SA
1	Door Closer	351 P10	EN	SA
1	Wall Stop	412 (463 as required)	US26D	RO
1	Kick Plate	K1050 10"	US32D	RO
1	Gasketing	PK55BL		PE

SET: 11.0

Doors: 104/D1

3	Hinge	T4A3786	US26D	MK
1	Passage Set	8215 LNL	US26D	SA
1	Wall Stop	412	US26D	RO
3	Silencer	608		RO

END OF SECTION 08 70 00

**SECTION 08 8000
GLASS AND GLAZING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 General Requirements Specification Sections, apply to the Work of this Section.
- B. Provide material, labor, equipment and services necessary to furnish, deliver and install all work of this Section as shown on the drawings, as specified and as required by job conditions, including but not limited to the following.
- C. Glass and Glazing for the following:
 - 1. Hollow metal door frames and borrow lites.
 - 2. Flush wood door lites.
 - 3. Aluminum storefront, curtain wall, windows and doors.
- D. Furnish and install all mirrors listed on toilet room accessory schedule and shown on drawings and for demonstration tables and mobile demonstration carts as detailed.
- E. Glazing compounds and accessories.

1.02 RELATED REQUIREMENTS

- A. Section 08 1000 - Hollow Metal Door and Door and Window Frames
- B. Section 08 1416 - Flush Wood Doors: Glazed lites in doors.
- C. Section 08 4000 - Aluminum Storefront and Curtainwall

1.03 REFERENCE STANDARDS

- A. 16 CFR 1201 - Safety Standard for Architectural Glazing Materials current edition.
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials Used in Buildings - Safety Performance Specifications and Methods of Test 2015.
- C. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers 2005 (Reapproved 2015).
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.
- E. ASTM C1036 - Standard Specification for Flat Glass 2021.
- F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.
- G. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass 2014.
- H. ASTM C1193 - Standard Guide for Use of Joint Sealants 2016.
- I. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass 2015.
- J. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings 2016.
- K. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation 2010.
- L. GANA (GM) - GANA Glazing Manual 2008.
- M. GANA (SM) - GANA Sealant Manual 2008.
- N. GANA (TIPS) - Mirrors Handle with Extreme Care: Tips For the Professional on the Care and Handling of Mirrors; National Association of Mirror Manufacturers; 2004
- O. GANA (LGRM) - Laminated Glazing Reference Manual 2009.
- P. IGMA TM-3000 - North American Glazing Guidelines for Sealed Insulating Glass Units for Commercial & Residential Use 1990 (2016).
- Q. NFRC 100 - Procedure for Determining Fenestration Product U-factors 2014.

- R. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence 2014.
- S. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems 2014.

1.04 SUBMITTALS

- A. Comply with requirements of Section 01 33 00 - Submittals
- B. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
- C. Product Data on Glazing Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors.
- D. Samples: Submit two samples 12 by 12 inch (304.8 by 304.8 mm) in size of glass units, showing coloration.

1.05 QUALITY ASSURANCE

- A. This Contractor shall comply with I.B.C. Chapter 24 (latest edition) requirements regarding installation of tempered glazing within door and window frames.
- B. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for glazing installation methods. Maintain one copy on site.
- C. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- D. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years documented experience.

1.06 WARRANTY

- A. Deliver a written guarantee to Owner covering the prompt repair or replacement of any defective work provided under this Section, at no cost to Owner, for a period of one (1) year after effective date of Substantial Completion. Guarantee does not cover breakage by others, improper maintenance, or abuse. Guarantee shall be in the form furnished under Section 01 7836 - Form of Guarantee.
- B. Insulating Glass - Ten (10) Years
 - 1. Provide insulating glass manufacturer's written warranty, agreeing to furnish F.O.B. project site, replacement for insulating glass units which have defective seals (excluding that due to glass breakage); defined to include the development of material obstruction of vision between the interior glass surface, deterioration of internal glass, glass coatings, and other visual evidence of seal failure or performance failure, provided manufacturer's instructions for handling, installation, protection and maintenance have been adhered to during warranty period. Warranty period is ten (10) years after seal date is permanently imprinted on unit.
- C. Infill Panels – Five (5) year warranty on panel laminations and twenty (20) year warranty on finish.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Glass Fabricators:
 - 1. AGC Glass Company North America, Inc[<>]: www.us.agc.com.
 - 2. Guardian Industries Corp[<>]: www.sunguardglass.com
 - 3. Northwestern Industries. www.nwiglass.com
 - 4. PPG Industries, Inc[<>]: www.ppgideascales.com.
 - 5. Viracon, Inc: www.viracon.com.
- B. Float Glass Manufacturers:

1. AGC Glass Company North America, Inc: www.us.agc.com.
 2. Cardinal Glass Industries: www.cardinalcorp.com.
 3. Guardian Industries Corp: www.sunguardglass.com.
 4. Pilkington North America Inc: www.pilkington.com/na.
 5. PPG Industries, Inc: www.ppgideascape.com.
- C. Mirrored (One-way) Glass Manufacturers:
1. Pilkington North America Inc; Pilkington Mirropane Transparent Mirror:
www.pilkington.com/na.
 2. Substitutions: Refer to Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

- A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
1. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
 2. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
 3. Glass thicknesses listed are minimum.
- B. Vapor Retarder and Air Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure vapor retarder and air barrier.
1. In conjunction with vapor retarder and joint sealer materials described in other sections.
- C. Thermal and Optical Performance: Provide glass products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 5.2/6.3 computer program.
 2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 5.2/6.3 computer program.
 3. Solar Optical Properties: Comply with NFRC 300 test method.

2.03 GLASS MATERIALS

- A. Obtain glass and glazing units through one source from a single manufacturer.
- B. Float Glass: Provide float glass based glazing unless noted otherwise.
1. Float glass to be provided clear unless noted otherwise.
 2. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality-Q3.
 3. Heat-Strengthened and Fully Tempered Types: ASTM C1048, Kind HS and FT.
 4. Fire Rated, Safety Glass: Complies with ASTM E152 and ASTM E163
 5. Fully Tempered Safety Glass: Complies with ANSI Z97.1 and 16 CFR 1201 criteria.
 6. Framed Mirrors:
 - a. Tempered One-Way Mirror Glass: Complies with ASTM C1048
 - b. One-piece channel frame is 1/2" x 1/2" x 1/2" (13 x 13 x 13mm) with bright polished finish and mitered corners. Phillips head frame screw permits easy replacement of mirror. No. 1 quality, 1/4" (6mm) glass mirror electrolytically copper-plated; guaranteed against silver spoilage for ten (10) years. Mirror edges and back protected by shock-absorbing material. Back is galvanized steel; secured to concealed wall hanger with theft-resistant locking screws.
 7. Thicknesses:
 - a. Tempered Float Glass: 1/4 inch
 - b. Float Glass: 1/4"

2.04 INSULATING GLASS UNITS

- A. Obtain glass and glazing units through one source from a single manufacturer. The following manufacturers are considered acceptable.
- B. Manufacturers:

1. Any of the manufacturers specified for float glass.
 2. Cardinal Glass Industries: www.cardinalcorp.com.
 3. Guardian Industries Corp: www.sunguardglass.com.
 4. Northwestern Industries. www.nwiglass.com
 5. Pilkington North America Inc: www.pilkington.com/na.
 6. PPG Industries, Inc: www.ppgideascape.com.
 7. Viracon, Apogee Enterprises, Inc: www.viracon.com.
- C. Insulating Glass Units: Types as indicated herein and in glazing schedule.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
 2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
 3. Metal Edge Spacers: Aluminum, bent and soldered corners.
 4. Spacer Color: Black.
 5. Edge Seal:
 - a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone or polysulfide sealant as secondary seal applied around perimeter.
 6. Purge interpane space with dry air, hermetically sealed.
 7. Capillary Tubes: Provide tubes from air space for insulating glass units without inert type gas that have a change of altitude greater than 2500 feet (762 m) between point of fabrication and point of installation to permit pressure equalization of air space.
 - a. Breather Tubes: Seal or crimp breather tubes upon installation in accordance with insulating glass fabricator's requirements.
 - b. Inert gas may be installed in the field into air space in accordance with insulating glass fabricator's and installer's requirements.
 8. Vision glass, double glazed
 - a. Outboard lite:
 - 1) 1/4" Solarban 60 annealed or tempered where required with tinting in color selected by architect from manufacturer's full range of options.
 - (a) Winter night U-value: .29
 - (b) Summer day U-value: .27
 - b. Inboard lite:
 - 1) 1/4" Clear Glass, annealed or tempered where required.
 9. Spandrel glazing
 - a. Shall be Mapespan, as manufactured by Mapes Architectural Panels (or approved equal)
 - 1) Colors
 - (a) Glass: Per manufacturer's standard
 - b. Type 1 (Transparent Glass), Class 1 (Clean), condition C (coated) glass Spandrel shall be manufactured standard color ceramic frit applied to clear glass substrate
 - 1) Outboard lite:
 - (a) See Glazing Schedule- for locations of glazing type, annealing and tempering
 - (b) 1/4" with tinting in color selected by architect from manufacturer's full range of options.
 - 2) Inboard lite:
 - (a) 1/4" Clear Glass, heat strengthened or fully tempered.

2.05 GLAZING COMPOUNDS

- A. One or two part polysulfide sealant prepared especially for glazing in consistency for ribbon, gun, or knife application to suit glazing conditions; approved color.

2.06 ACCESSORIES

- A. Setting Blocks: Silicone, with 80 to 90 Shore A durometer hardness; ASTM C864 Option II. Length of 0.1 inch for each square foot (25 mm for each square meter) of glazing or minimum 4 inch (100 mm) x width of glazing rabbet space minus 1/16 inch (1.5 mm) x height to suit glazing method and pane weight and area.
- B. Spacer Shims: Neoprene, 50 to 60 Shore A durometer hardness; ASTM C864 Option II. Minimum 3 inch (75 mm) long x one half the height of the glazing stop x thickness to suit application, self adhesive on one face.
- C. Glazing Channels and Beads
 - 1. Non-stretching and non-shrinking, extruded vinyl, high shore, incorporating fiberglass cord bonded to vinyl.
 - 2. Color to match adjoining surface.
 - 3. Use channels and beads furnished under other Sections, as applicable.

PART 3 EXECUTION

3.01 VERIFICATION OF CONDITIONS

- A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
- B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.

3.02 PREPARATION

- A. Clean contact surfaces with appropriate solvent and wipe dry within maximum of 24 hours before glazing. Remove coatings that are not tightly bonded to substrates.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.

3.03 INSTALLATION, GENERAL

- A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
- B. Install glazing sealants in accordance with ASTM C1193, GANA Sealant Manual, and manufacturer's instructions.
- C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
- D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
- E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
- F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.
- G. Glaze openings at job site unless otherwise approved.
- H. Glaze storefront and entrance doors using glazing channels and beads in accordance with manufacturer's details and accepted shop drawings.
- I. Cutting and Fitting Glass: Accurately cut and fit glass with minimum glass edge clearance 1/8" up to 14 sq. ft.; 3/16" from 14 to 32 sq. ft. and 1/4" over 32 sq. ft. Set with convex side out.
- J. Set glass in rebates using manufacturer's standard glazing fittings, chairs, angles, or bars.
- K. Set glass to preclude looseness and rattling.
- L. Glazing Channels and Beads: Install in one (1) piece on each glass edge, corners neatly and tightly fitted.

3.04 FIELD QUALITY CONTROL

- A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
- B. Monitor and report installation procedures and unacceptable conditions.

3.05 CLEANING

- A. As pertains to the Work of this Section, at frequent intervals during and again upon completion of work, remove from building and site, tools and equipment, surplus materials, rubbish, debris, dust and dirt, and leave areas affected by the Work of this Section in a clean condition.
- B. The thorough cleaning and polishing of glass surfaces upon completion of work, will be performed under Section 01 7413 - Cleaning Up.
- C. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
- D. Remove non-permanent labels immediately after glazing installation is complete.
- E. Clean glass and adjacent surfaces after sealants are fully cured.
- F. Clean glass on both exposed surfaces not more than 4 days prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.

3.06 PROTECTION

- A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
- B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.
 - 1. Replace cracked, broken or imperfect glass infill panels, and glass which cannot be properly cleaned at completion of work.

END OF SECTION

**SECTION 09 2000
GYPSUM BOARD ASSEMBLIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. This Section includes all labor, materials, equipment, services, scaffolding, supervision, etc. to complete all gypsum board assembly work as shown on the drawings or specified herein:
 - 1. All required gypsum board, perforated taped, sanded and finished on framed stud walls
 - 2. All required structural insulated sheathing prepared as required to receive required finishes.
 - 3. Steel stud wall framing with runners, bracing, blocking, etc.
- C. Framing for suspended ceilings including special framed assemblies at ceilings in shower rooms.
- D. Coordinate work and provide openings and anchorages for recessed toilet room accessories, wall access doors, fire extinguisher cabinets and other recesses and built in items.
- E. All moldings and accessories.
- F. Metal channel ceiling framing.
- G. Joint treatment and accessories.
- H. Clean-up and disposal of debris as a result of this Work.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Carpentry: Wood blocking product and execution requirements.
- B. Section 07 2000 - Building Insulation
- C. Section 09 3000 - Tiling: Tile backing board.
- D. Section 09 5100 - Acoustical Ceilings

1.03 REFERENCE STANDARDS

- A. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium). 2017.
- B. ANSI A108/A118/A136.1 - American National Standard Specifications for the Installation of Ceramic Tile (Compendium). 2017.
- C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2020.
- D. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board 2017.
- E. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board 2004 (Reapproved 2014).
- F. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing 2003 (Reapproved 2017).
- G. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.
- H. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products 2017.
- I. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board 2017a.
- J. ASTM C1047 - Standard Specification for Accessories For Gypsum Wallboard and Gypsum Veneer Base 2014a.

- K. ASTM C1177/C1177M - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing 2013.
- L. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing 2013a.
- M. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cementitious Backer Units 2017a.
- N. ASTM C1396/C1396M - Standard Specification for Gypsum Board 2017.
- O. ASTM C1629/C1629M - Standard Classification for Abuse-Resistant Nondecorated Interior Gypsum Panel Products and Fiber-Reinforced Cement Panels 2015.
- P. ASTM C1658/C1658M - Standard Specification for Glass Mat Gypsum Panels 2013.
- Q. ASTM D3273 - Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber 2016.
- R. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009 (Reapproved 2016).
- S. ASTM E413 - Classification for Rating Sound Insulation 2016.
- T. GA-216 - Application and Finishing of Gypsum Board 2016.
- U. GA-600 - Fire Resistance Design Manual 2015.
- V. UL (FRD) - Fire Resistance Directory current edition.

1.04 SUBMITTALS

- A. Submit in accordance with requirements of Section 01 3300 - Submittals
- B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
 - 1. Provide layout of required expansion joints as noted herein.
- 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.

1.05 DELIVERY, STORAGE AND HANDLING

- A. All materials shall be delivered in their original unopened packages, containers, and bundles bearing the name of the manufacturer and the brand name. Materials shall be stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the project.

1.06 QUALITY ASSURANCE

- A. All exterior gypsum board sheathing installed on exteriors walls, fascia and soffit shall be limited to thirty (30) days maximum exposure to the elements prior to installation of the finishing systems. All material exposed beyond this limit will be replaced with new at no additional cost to the owner. No exceptions.

1.07 WARRANTY

- A. Contractor shall furnish Owner a written guarantee that workmanship and material installed are first class in every respect, and that he will make good, at his own expense, any defects in such workmanship and material, that may develop within one (1) year from date of Substantial Completion. Guarantee shall be on form included in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 GYPSUM BOARD ASSEMBLIES

- A. Provide completed assemblies complying with ASTM C840 and GA-216.

2.02 METAL FRAMING MATERIALS

- A. Manufacturers - Metal Framing, Connectors, and Accessories:
 - 1. Cemco Steel: www.cemcosteel.com

2. ClarkDietrich Building Systems[<>]: www.clarkdietrich.com.
 3. Marino; []: www.marinoware.com.
 4. SCAFCO Steel Stud Mfg. Co.: www.scafco.com
 5. The Steel Network, Inc; []: www.SteelNetwork.com
 6. Substitutions: Others desiring to bid this project may do so by submitting in accordance with requirements of Section 00 4325 - Product Substitutions
- B. Steel Studs: Shall be type, gauge and size as shown on the drawings and as noted in reference notes on drawings. Provide slip track where required and as specified herein.
1. Walls: 1-5/8", twenty (20) ga. studs shall be No. 158 ST 20 (1-5/8") metal studs, channel type, roll-formed from zinc coated steel, designed for weld or screw attachment, in lengths as required with No. 158 CR20 top and bottom runners and bracing.
 2. Walls: 3-5/8", twenty (20) ga. studs shall be No. 358 ST 20 (3-5/8") metal studs, channel type, roll-formed from zinc coated steel, designed for weld or screw attachment, in lengths as required with No. 358 CR20 top and bottom runners and bracing.
 3. Walls: 6", twenty (20) ga. studs shall be No. 600 ST 20 (6") metal studs, channel type, roll-formed from zinc coated steel, designed for weld or screw attachment, in lengths as required with No. 600 CR20 top and bottom runners and bracing.
 4. Walls: 6", sixteen (16) ga. studs shall be No. 600 ST 16 (6") metal studs, channel type, roll-formed from zinc coated steel, designed for weld or screw attachment, in lengths as required with No. 600 CR16 top and bottom runners and bracing.
 5. Furring/Hat Channel: 7/8" twenty-five (25) ga. roll formed zinc coated steel designed for screw attachment, in lengths as required.
 6. Wall Resilient Furring Channels: 1/2", twenty-five (25) ga. roll-formed from zinc coated steel designed for screw attachment, in lengths as required.
 7. Slotted (Slip) Track: Design is based on the use of SLP-Trk manufactured by SlipTrack Systems, Inc. Slotted Track shall be provided in standard widths of 6, 4, 3-5/8, 3-1/2 and 2-1/2" and in twenty (20) and twenty-five (25) ga. sheet steel thickness, as required by project conditions and detailed accordingly. Down standing legs shall be nominally 2-1/2" and shall be provided with 1-1/2" slots at 1" on center. The following slip track manufacturers are approved to bid this project:
 - a. SlipTrack Systems, Inc., www.sliptrack.com
 - b. Fire Trak Corporation, www.firetrak.com
 - c. Others desiring to bid this project may do so by submitting in accordance with requirements of Section 00 4325 - Product Substitutions
 8. Framed Ceilings and Skyroof Wells: 1-5/8", 3-5/8 "and 6" (158 ST, 358 ST and 600 SJ) twenty (20) ga. steel studs with screw attachments.
 9. Corner and Edge Trim:
 - a. Metal: Twenty-four (24) ga. minimum steel, electrolytic galvanized zinc-coated, treated for maximum cement and paint adhesion. Surfaces to receive bedding cement shall be knurled for maximum bonding.
 - b. Paper-faced metal: Provided by one of the following:
 - 1) Beadex Drywall Accessories by USG www.usg.com
 - 2) Chicago Metallic, www.chicagometallic.com
 - 3) Goldline Drywall Trim by Clark Dietrich Building Systems www.clarkdietrich.com
- C. Suspension System
1. Metal Furring Channel: galvanized, twenty-five (25) ga.
 2. Metal Furring Channel Clips.
 3. Cold-Rolled Channels 1-1/2"
 - a. 1-1/2" .475 pound per ft. (sixteen (16) ga.) painted.
 4. Furring Runner: Chicago Metallic.
 5. Furring Tee: Chicago Metallic.
 6. Wall Track: Chicago Metallic.
 7. Suspension Wire: Nine (9) ga.
- D. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.

2.03 GYPSUM BOARD MATERIALS

- A. Manufacturers - Gypsum-Based Board:
 - 1. American Gypsum Company: www.americangypsum.com.
 - 2. CertainTeed Corporation: www.certainteed.com.
 - 3. Eagle Materials: www.eaglematerials.com
 - 4. Georgia-Pacific Gypsum: www.gpgypsum.com.
 - 5. Lafarge North America: www.lafargenorthamerica.com
 - 6. National Gypsum Company: www.nationalgypsum.com.
 - 7. PABCO Gypsum: www.pabco gypsum.com.
 - 8. Temple-Inland Inc: www.templeinland.com
 - 9. USG Corporation: www.usg.com.
 - 10. Substitutions: Others desiring to bid this project may do so by submitting in accordance with requirements of Section 00 4325 - Product Substitutions
- B. Gypsum Wallboard: Shall have eased radial edges specially designed to overcome joint deformation, shall comply with Federal Specification SS L 30c, ASTM C1396 & C1396M
 - 1. 5/8" type firecode gypsum wallboard with tapered edges complying with ASTM C630.
 - 2. 5/8" type WR firecode gypsum wallboard with tapered edges complying with ASTM C630.

2.04 STRUCTURAL INSULATED SHEATHING MATERIALS

- A. Basis of Design: Maxlife Industries ArmorWall VP Structural Insulated Sheathing
 - 1. Install at locations noted on drawings and in accordance with manufacturers requirements.
 - 2. Provide accessories as required by manufacturer.

2.05 ACCESSORIES

- A. Beads, Joint Accessories, and Other Trim: ASTM C1047, galvanized steel, unless noted otherwise.
 - 1. Rigid Corner Beads: Low profile, for 90 degree outside corners. Corner beads shall be Dur-A-Bead 900.
 - 2. Stops: Where gypsum board terminates at other surfaces shall be No. 701-A.
 - 3. Control joints: No. 093, roll-formed of zinc.
 - 4. Architectural Reveal Beads:
 - a. Shapes: As shown on drawings.
- B. Joint Materials: ASTM C475 and Federal Specification SS J 570a, Type I, Type II and Type III.
 - 1. Pre-Fill Compound shall be DURABOND 90 Joint Compound - Multi- Purpose.
 - 2. Taping Compound shall be DURABOND Joint Compound - Taping.
 - 3. Topping Compound shall be DURABOND Joint Compound -Topping.
 - 4. Reinforcing Tape shall be PERF-A-TAPE Reinforcing Tape, spark perforated and with beveled edges.
- C. Wallboard Sealant shall be USG SHEETROCK Brand W/R Sealant.
- D. Fasteners
 - 1. Walls (1-Hr and 2-Hr Rated)
 - a. Shall be 1-1/4" Type "S" bugle head screws. Spacing to be 8" o.c. at perimeter and in the field.
 - b. Shall be 1-7/8" Type "S" bugle head screws at two (2) layer installations.
 - 2. Walls (Non-Rated): Shall be 1" Type "S" bugle head screws, spacing to be 8" o.c. At perimeter and 12" o.c. in the field.
 - 3. Suspended Ceilings and Soffits (1-Hr. and 2 -Hr. Rated)
 - a. Shall be 1-5/8" bugle head screws. Spacing to be 8" o.c. at perimeters and 8" o.c. in the field (Type "S" at steel framing).
 - b. Shall be 1-7/8" Type "S" bugle head screws at two (2) layer installations.
 - 4. Studs to Runners (Non-Structural): Shall be 1/2" Type "S" Pan Head Screws.
 - 5. Studs to Runners (Structural): Refer to drawings.
 - 6. Studs to Door Frames: Shall be (1/2") Type "s-12" Pan Head Screws.

PART 3 EXECUTION

3.01 PREPARATION FOR INSTALLATION

- A. General: When outdoor temperature is below fifty-five degrees (55°F.), heat shall be maintained in the building continuously and uniformly at not less than fifty-five degrees (55°F.) for one (1) week prior to beginning of installation until the gypsum wallboard application and joint treatment is completed. Installation shall not be started until windows are glazed and doors are installed unless openings are temporarily closed. Ventilation, either natural or supplied by fans, circulators, or air-conditioning system, shall be provided to remove excess moisture during joint treatment.
- B. Verify that project conditions are appropriate for work of this section to commence. Before any gypsum board is applied, this Contractor shall check the alignment of framing members and make necessary adjustments before proceeding with the application of gypsum wallboard.
- C. Coordinate layout of stud framing with Section 07 4210 - Exterior Metal Wall System contractor at metal panel locations.
 - 1. Provide and install sixteen (16) ga. - 6" steel stud framing and anchor clips at all walls and soffits supporting the exterior metal panel system.

3.02 WORKMANSHIP

- A. Holes for electrical outlets and for other purposes shall be accurately sized to fit. Any holes not able to be covered because of faulty cutting and workmanship shall be repaired to the satisfaction of the Architect.
- B. Any rough joints, popped screws, poor application, or finish shall be repaired before any painting is performed.
- C. Review of work by painter and Architect will be done after work is assumed completed in order to make any changes or corrections in the Work or material.

3.03 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. Laterally brace entire suspension system.
- C. Stud walls and Ceilings
 - 1. Suspended Ceilings: Conform to ASTM C 1395. See detail on reflected ceiling plans.
 - a. Suspended gypsum board ceiling can only be attached to joists, beams, and composite floor deck. No attachment to roof deck, plumbing, ductwork, electrical, or sprinkler piping will be allowed.
 - b. Space nine (9) ga. hanger wires 48" o.c. along carrying channels and within 6" of ends of carrying channel runs. Attach wires to steel girders, beams, joists or purlins. Wires shall not be attached to or come in contact with any component of the mechanical or plumbing system.
 - c. Install 1-1/2" carrying channels 36" o.c. and within 6" of walls. Position channels for proper ceiling height, level, and secure with hanger wire saddle-tied along channel. Provide 1-1/4" clearance between runners and abutting walls and partitions. At channel splices, interlock flanges, overlap ends 12" and secure each end with double-strand sixteen (16) ga. tie wire.
 - d. Erect metal furring channels at right angles 1-1/2" carrying channels or main support members. Space furring 24" o.c. and within 6" of walls. Provide 1" clearance between furring ends and abutting walls and partitions. Secure furring to carrying channels with clips or saddle-tie to supports with double-strand sixteen (16) ga. tie wire. At splices, nest furring channels at least 8" and securely wire-tie each end with double-strand sixteen (16) ga. tie wire.
 - e. At light troffers or any openings that interrupt the carrying or furring channels, install additional cross reinforcing to restore lateral stability of grillage.
 - f. Erect to a level plane all directions.

3.04 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. General - Install so trim and reinforcing tape is fully backed by gypsum wallboard. No hollow spaces over 1/8" wide are permitted.
- C. Cutting Gypsum Board
 - 1. Gypsum board shall be cut either by scoring and breaking or by sawing, working from the face paper side. When scoring, a sharp knife shall be used to cut through the face paper into the gypsum core. The gypsum board shall be snapped back away from the cut face. Back paper shall be cut. As an alternate to cutting the back paper, the back paper shall be broken by snapping the gypsum board in the reverse direction.
 - a. All cut edges and ends of gypsum boards shall be smoothed where necessary to obtain neat fitting joints when the gypsum board is installed.
 - 2. Holes for pipes, fixtures or other small openings shall be scored on both the face and back before removal of the cut-out with a saw or special tool designed for this purpose.
 - 3. Where gypsum board meets projecting surfaces, the gypsum board shall be scribed and neatly cut.
- D. Single Layer Application
 - 1. Apply ceiling first (if gypsum board).
 - 2. Use board of length to give minimum number of joints.
 - 3. On walls over 9' high and on ceilings, apply board perpendicular to support.
 - 4. Stagger end joints. End and edge joints of board applied on ceilings shall occur over framing members or be back blocked with blocking. End joints of board horizontally applied on walls shall occur over framing member. Edge joints of board vertically applied on walls shall occur over framing members.
 - 5. Butt edges in moderate contact. Do not force in place. Shim to level.
 - 6. Leave facings true with joint, finishing flush. Vertical work shall be plumb and ceiling surfaces level.
 - 7. Scribe work closely. Keep joints as far from openings as possible. If joints occur near an opening, apply wallboard so vertical joints are centered over openings. No vertical joints shall occur within 8" of external corners or openings.
 - 8. Install board tight against support with joints even and true. Tighten loose screws.
 - 9. Caulk perimeter joints in sound insulated rooms with specified acoustical sealant.
 - 10. Provide 1/2" (max.) gap at floor to bottom of gypsum board.
- E. Double Layer Application (if required)
 - 1. Apply base layer as specified for single layer application, except edge joints need not occur over framing members or be back blocked.
 - 2. Apply face layer with joints staggered in relationship to base and occurring over supports. Use combination of adhesive and screws to meet Manufacturer's specifications for fire-rated assembly. Apply screws attaching face layer through base layer into support for specified penetration.
- F. Fastening
 - 1. Apply from center of wallboard towards ends and edges.
 - 2. Apply screws 3/8" minimum from ends and edges, 1" maximum from edges, and 1/2" maximum from ends.
 - 3. Spacing as required in Part 2 of this specification.
 - 4. Set screw heads 1/32" below plane of board, but do not break face paper. If face is accidentally broken, apply additional screw 2" away.
 - 5. Screws on adjacent ends or edges shall be opposite each other.
 - 6. Drive screws with shank perpendicular to face of board.

3.05 INSTALLATION OF TRIM AND ACCESSORIES

- A. Control Joints: Place control joints consistent with lines of building spaces and as required below and as per U.S.G. standard requirements or as detailed on drawings.

1. Walls: 30'-0" maximum in either direction.
 2. Ceilings: 50'-0" maximum in either direction (with perimeter relief).
 3. Ceilings: 30'-0" maximum in either direction (without perimeter relief).
 4. Ceiling height door frames may be used as vertical control joints for partitions; however, door frames of lesser height may only be used as control joints extend to the ceiling from both corners of the top of the door frame. When planning locations for control joints in the ceiling, it is recommended that they be located to intersect column penetrations, since movement of columns can impose stresses on the ceiling membrane.
- B. Corner Beads: Install at external corners, using longest practical lengths.
1. Metal Corner Bead: Attach with screws spaced 8" apart maximum.
 2. Paper-Faced Corner Bead: Set in solid bed of taping compound.
- C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials. Hold channel and 'L' trim back 1/8" to allow for caulking..
- D. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations shown on the drawings. Provide vent area required by code.
- E. Special Moldings: Install per manufacturer's requirements and as detailed on drawings.

3.06 JOINT TREATMENT COMPOUND:

- A. Shall be mixed according to manufacturer's directions.
- B. Pre-filling: All "V" grooves formed by abutting eased radial edges of wallboard shall be filled flush with the plane of the taper with pre-fill compound. Excess compound beyond the "V" groove shall be wiped clean leaving a flat joint to receive the taping.
- C. Taping: After pre-fill has hardened, a thin, uniform layer of taping compound shall be applied to all joints and angles to be reinforced. Reinforcing tape shall be applied immediately, centered over the joint, seated into the compound. A skim coat shall follow immediately, but shall not function as a fill or second coat. Tape shall be properly folded and embedded in all angles to provide a true angle.
- D. Filling: After taping compound has hardened, topping compound shall be applied, filling the board taper flush with the surface. The fill coat shall cover the tape and feather out slight beyond the tape. On joints with no taper, the fill coat shall cover the tape and feather out at least 4" on either side of the tape. No fill coat is necessary on interior angles.
- E. Finishing: After topping compound is set, a finishing coat of topping compound shall be spread evenly over and extending slightly beyond the fill coat on all joints and feathered to a smooth, uniform finish. Over tapered edges, the finished joint shall not protrude beyond the plane of the surface. All tapered angles shall receive a finish coat to cover the tape and taping compound, and provide a true angle. Where necessary, sanding shall be done between coats and following the final application of compound to provide a smooth surface, ready for decoration.
- F. Finishing Beads and Trim: Taping compound shall be applied to all bead and trim and shall be feathered out from the ground to the plane of the surface. When hardened this shall be followed by two (2) coats of topping compound each extending slightly beyond the previous coat. The finish coat shall be feathered from the ground to the plane of the surface and sanded as necessary to provide a flat, smooth surface ready for decoration.
- G. Finishing Levels
1. Unfinished Gypsum Board Surfaces & Under Acoustical Tile
 - a. GA-214-90 Level Two - 'All joints and interior angles shall have tape embedded in joint compound and one (1) separate coat of joint compound applied over all joints, angles, fastener heads, and accessories. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable,' except under acoustical tile.'
 2. Gypsum Board and Concrete Surfaces in Mechanical, Storage, and Utility Areas to Receive Paint
 - a. GA-214-90 Level Three - 'All joints and interior angles shall have tape embedded in joint compound and two (2) separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. All joint compounds shall be smooth and

- free of tool marks and ridges.'
3. Gypsum Board Surfaces to Receive Wall Covering and Mechanical, Storage and Utility Areas
 - a. GA-214-90 Level Four - 'All joints and interior angles shall have tape embedded in joint compound and three (3) separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. All joint compounds shall be smooth and free of tool marks and ridges.'
 4. Gypsum Board and Concrete Surfaces to Receive Paint (Except in Mechanical, Storage and Utility Areas).
 - a. GA-214-90 Level Five - (Gypsum Board) 'All joints and interior angles shall have tape embedded in joint compound and three (3) separate coats of joint compound applied over all joints, angles, fastener heads, and accessories. A thin skim coat of joint compound, or a material manufactured especially for this purpose, shall be applied to the entire surface. The surface shall be smooth and free of tool marks and ridges.'
 - b. GA-214-90 Level Five - (Concrete) 'All surfaces shall receive a minimum of two (2) separate coats of joint compound or material manufactured especially for this purpose or as may be required to provide the Level Five Finish. All surfaces shall be sanded smooth and free of tool marks and ridges.'

3.07 CLEAN-UP;

- A. Debris and surplus material shall be removed from the building and site when work is completed. Drywall compound droppings and stains shall be cleaned from floor.

END OF SECTION

**SECTION 09 3000
CERAMIC TILE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, transportation, services etc. to fully complete all ceramic tile work as shown on the drawings or specified herein.
- C. Tile for floor applications.
- D. Tile for wall applications.
- E. Ceramic accessories.
- F. Ceramic trim.
- G. Metal trim and cove.
- H. Provide wall and floor tile grout sealer at all locations.
- I. Clean-up and disposal of debris as a result of this Work.
- J. Non-ceramic trim.

1.02 RELATED REQUIREMENTS

- A. Section 09 2116 - Gypsum Board Assemblies

1.03 REFERENCE STANDARDS

- A. ANSI A108.1a - American National Standard Specifications for Installation of Ceramic Tile in the Wet-Set Method, with Portland Cement Mortar 2014.
- B. ANSI A108.1b - American National Standard Specifications for Installation of Ceramic Tile on a Cured Portland Cement Mortar Setting Bed with Dry-Set or Latex-Portland Cement Mortar 2017.
- C. ANSI A108.1c - Specifications for Contractors Option: Installation of Ceramic Tile in the Wet-Set Method with Portland Cement Mortar or Installation of Ceramic Tile on a Cured Portland Cement Mortar Bed with Dry-Set or Latex-Portland Cement 1999 (Reaffirmed 2016).
- D. ANSI A108.4 - American National Standard Specifications for Installation of Ceramic Tile with Organic Adhesives or Water Cleanable Tile-Setting Epoxy Adhesive 2009 (Revised).
- E. ANSI A108.5 - American National Standard Specifications for Installation of Ceramic Tile with Dry-Set Portland Cement Mortar or Latex-Portland Cement Mortar 1999 (Reaffirmed 2010).
- F. ANSI A108.6 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy 1999 (Reaffirmed 2010).
- G. ANSI A108.8 - American National Standard Specifications for Installation of Ceramic Tile with Chemical Resistant Furan Resin Mortar and Grout 1999 (Reaffirmed 2010).
- H. ANSI A108.9 - American National Standard Specifications for Installation of Ceramic Tile with Modified Epoxy Emulsion Mortar/Grout 1999 (Reaffirmed 2010).
- I. ANSI A108.10 - American National Standard Specifications for Installation of Grout in Tilework 2017.
- J. ANSI A108/A118/A136.1 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2010).
- K. ANSI A108.12 - American National Standard for Installation of Ceramic Tile with EGP (Exterior Glue Plywood) Latex-Portland Cement Mortar 1999 (Reaffirmed 2010).
- L. ANSI A108.13 - American National Standard for Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone 2005 (Reaffirmed 2010).

- M. ANSI A118.1 - American National Standard Specifications for Dry-Set Cement Mortar 2012 (Revised).
- N. ANSI A118.3 - American National Standard Specifications for Chemical Resistant, Water Cleanable Tile-Setting and -Grouting Epoxy and Water Cleanable Tile-Setting Epoxy Adhesive 2013 (Revised).
- O. ANSI A118.4 - American National Standard Specifications for Modified Dry-Set Cement Mortar 2012 (Revised).
- P. ANSI A118.6 - American National Standard Specifications for Standard Cement Grouts for Tile Installation 2010 (Reaffirmed 2016).
- Q. ANSI A118.7 - American National Standard Specifications for High Performance Cement Grouts for Tile Installation 2010 (Reaffirmed 2016).
- R. ANSI A108/A118/A136.1 - American National Standard Specifications for Test Methods and Specifications for Cementitious Backer Units 1999 (Reaffirmed 2010).
- S. ANSI A118.10 - American National Standard Specifications for Load Bearing, Bonded, Waterproof Membranes For Thin-Set Ceramic Tile And Dimension Stone Installation 2014.
- T. ANSI A136.1 - American National Standard for Organic Adhesives for Installation of Ceramic Tile 2008 (Reaffirmed 2013).
- U. ANSI A137.1 - American National Standard Specifications for Ceramic Tile 2019.
- V. ASTM C847 - Standard Specification for Metal Lath 2018.
- W. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel 2013.
- X. ASTM F710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring 2017.
- Y. ASTM F1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride 2016a.
- Z. TCNA (HB) - Handbook for Ceramic, Glass, and Stone Tile Installation 2016.

1.04 SUBMITTALS

- A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
- B. Samples: Submit one (1) sample of each type, class and color of tile required. Architect's review will be for color, pattern and texture only. Compliance with all other requirements is the exclusive responsibility of the Contractor.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.
 - 1. Provide tile equal to or exceeding Standard Grade requirements ANSI/A 137.1.
- B. Installer Qualifications: Company specializing in performing tile installation, with minimum of five years of documented experience.
- C. Use setting and grouting materials manufactured under TCNA license, provide such identification together with formula on each container.
- D. Provide materials obtained from only one (1) source and of one (1) production run for each type and color of tile.
- E. Proprietary Materials: Handle, store, mix and apply proprietary setting and grouting materials in compliance with manufacturer's instructions.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials and store on site in original containers with seals unbroken and labels intact until time of use.

1.07 WARRANTY

- A. Furnish written guarantee covering all labor and materials of this Section for a period of one (1) year from the date of Substantial Completion of the building. Shall be in form bound in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 TILE

- A. Manufacturers: Drawings and specifications are based on products made by Dal-Tile Corporation..
1. American Olean Corporation: www.americanolean.com.
 2. Dal-Tile Corporation: www.daltile.com.
 3. Florida Tile: www.floridatile.com
 4. Other manufacturers desiring to bid may do so by following the requirements of Section 00 4325 - Product Substitutions
- B. Floor Tile:
1. Refer to Floor & Finish Plans for location of various tile types.
 2. Thickset and Thinset Porcelain Tile - "FT-1"
 - a. Shall be 12" x 24" x 3/8" Thick "Marble Attache" as manufactured by Dal-tile Corporation.
 - b. Color as selected by Architect
 - c. Floor tile to have matte finish
 3. Adhere to TCA #F112
 - a. Materials
 - 1) Mortar Bed: ANSI A108.1A.
 - 2) Bond Coat: Portland cement paste on a mortar bed that is still workable, or dry-set mortar or Latex-Portland cement mortar on a cured bed.
 - 3) Grout: ANSI A118.6, sand Portland cement grout.
 - 4) Mortar Bed Bond Coat: Portland cement slurry.
 - 5) Maximum Variation in subfloor - 1/4" on 10'-0". Slope subfloor 1/4" per foot to drain (or as indicated).
- C. Wall Tile and Base.
1. Thickset Ceramic Tile - "WT-1"
 - a. Shall be 4 1/4" x 4 1/4" Glazed Ceramic (Price Group 1) by Dalt-Tile Corporation.
 2. Thickset Porcelain Tile - "WT-2"
 - a. Shall be 12" x 24" x 3/8" Thick "Marble Attache" as manufactured by Dal-tile Corporation.
 - b. Color as selected by Architect.
 - c. Wall tile to have Satin finish.
 3. Adhere to TCA #W241-Sim.
 - a. Materials:
 - 1) Portland Cement: ASTM C-150, Type 1.
 - 2) Lime: ASTM C-206, Type S or ASTM C-207, Type S.
 - 3) Sand: ASTM C-144.
 - 4) Water: Potable.
 - 5) Scratch Coat: One (1) part Portland cement, half (1/2) part lime, and four (4) parts dry sand to five (5) parts damp sand or one (1) part Portland cement, three (3) parts dry sand to four (4) parts damp sand.
 - 6) Mortar Bed: One (1) part Portland cement, half (1/2) part lime and five (5) parts damp sand up to one (1) part Portland cement, one (1) part lime and seven (7) parts damp sand, by volume.
 - 7) Dry-Set Mortar: ANSI A118.1.
 - 8) Latex-Portland Cement Mortar: ANSI A118.4.
 - 9) Metal Lath: Galvanized or painted expanded metal lath 3.4 lbs. /sq. yd. Do not use rib lath.

- 10) Grout: ANSI A118.6 latex Portland cement grout.
- 11) Installation Specifications
 - (a) Cured Mortar Bed: ANSI A108.1B.
 - (b) Tile: ANSI A108.5.

2.02 TRIM AND ACCESSORIES

- A. Non-Ceramic Trim: Satin natural anodized extruded aluminum, style and dimensions to suit application, for setting using tile mortar or adhesive.
 - 1. Manufacturers:
 - a. Schluter-Systems: www.schluter.com.

2.03 SETTING MATERIALS

- A. Manufacturers:
 - 1. ARDEX Engineered Cements: www.ardexamericas.com.
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Custom Building Products: www.custombuildingproducts.com.
 - 4. Mapei Corporation: www.mapei.com
 - 5. LATICRETE International, Inc: www.laticrete.com.
 - 6. Merkrete, by Parex USA, Inc: www.merkrete.com.
 - 7. ProSpec, an Oldcastle brand: www.prospec.com.

2.04 GROUTS

- A. Manufacturers:
 - 1. ARDEX Engineered Cements: www.ardexamericas.com.
 - 2. Bostik Inc: www.bostik-us.com.
 - 3. Custom Building Products: www.custombuildingproducts.com.
 - 4. LATICRETE International, Inc; LATICRETE PERMACOLOR Grout: www.laticrete.com.
 - 5. Mapei Corporation: www.mapei.com
 - 6. Merkrete, by Parex USA, Inc; Merkrete Duracolor Non-Sanded Color Grout: www.merkrete.com.
 - 7. ProSpec, an Oldcastle brand; ProColor Sanded Tile Grout: www.prospec.com.

2.05 ACCESSORY MATERIALS

- A. Sealers
 - 1. Wall and ceiling grout condition:
 - a. Aqua Mix; Product - "Sealers Choice Gold": www.custombuildingproducts.com
 - b. ProSpec, an Oldcastle brand; - "ProSpec Grout Sealer": www.prospec.com.
 - c. Bostik, Inc.; Product - "Ceramaseal": www.bostik-us.com
 - d. Other manufacturers desiring to bid may do so by following the requirements of Section 00 4325 - Product Substitutions
 - 2. Floor tile and grout condition shall be the same as 1 above.
- B. Caulking Material: shall comply with requirements of Section 07 9000 - Caulking and Sealants. Color to match grout as selected by the Architect.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Installer must examine the areas and conditions under which tile work is to be installed. Notify the Contractor, in writing, of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

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.

3.03 INSTALLATION - GENERAL

- A. Install tile and thresholds and grout in accordance with applicable requirements of ANSI A108.1a through ANSI A108.13, manufacturer's instructions, and TCNA (HB) recommendations.
- B. Comply with the manufacturer's instructions for mixing and installation of proprietary materials.
 - 1. Neutralize and seal substrates in accordance with mortar or adhesive manufacturer's instructions, as required.
- C. Pattern shall be as directed by architect.. Do not interrupt tile pattern through openings.
 - 1. Extend tile work into recesses and under equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disruption of pattern or joint alignments.
- D. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
- E. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
 - 1. Joint Pattern: Unless otherwise shown, lay tile in grid pattern as accepted by the Architect. Lay out tile work and center tile fields both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths.
 - a. Set patterns to a line and plumb.
- F. Expansion and Control Joints: Provide as recommended in TCA "Handbook for Ceramic Tile Installation", Latest Edition.
- G. Form internal angles square and external angles bullnosed.
- H. Install non-ceramic trim in accordance with manufacturer's instructions.
- I. Sound tile after setting. Replace hollow sounding units.
- J. Keep control and expansion joints free of mortar, grout, and adhesive.
- K. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
- L. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
- M. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.
- N. Damp Curing: Wet with clean, drinkable water once a day for two (2) days following the installation; cover with breathable vapor barrier such as Kraft paper. Do not use polyethylene as grout may discolor due to uneven water retention.
- O. Metal Edge Strips: Provide where shown, and where exposed edge of ceramic tile flooring is to meet carpet, wood, or other resilient floor covering.
- P. Sealer
 - 1. Sealer to be provided on all wall and floor grout conditions along with all floor tile applied per manufacturer's recommended applications rates and procedures.
 - 2. All intersection of tile with dissimilar materials, interior ceramic tile corners, tops of ceramic tile wainscots, expansion joints, etc., shall be caulked.
- Q. Caulking
 - 1. Caulking shall be installed per specification requirements of Section 07 90 00, "Caulking and Sealants."
 - 2. All intersection of tile with dissimilar materials, interior ceramic tile corners, tops of ceramic tile wainscots, expansion joints, etc., shall be caulked.

3.04 CLEANING

- A. Upon completion of placement and grouting, clean tile installations as recommended by TCA and manufacturers of proprietary materials.
- B. Tile may be cleaned with acid solutions only when permitted by the tile and grout manufacturer's printed instructions, but not sooner than ten (10) days after installation. Protect

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metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning. Flush the surface with clean water before and after cleaning.

3.05 PROTECTION

- A. Leave finished installation clean and free of cracked, chipped, broken, unbonded or otherwise defective tile work.
- B. Protect installed tile work with Kraft paper or other heavy covering during the construction period to prevent damage and wear.

END OF SECTION

**SECTION 09 5100
ACOUSTICAL CEILINGS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. The Work of this Section includes furnishing all labor, materials, equipment and services required to execute and complete all items of acoustical tile and suspension work, as shown or indicated on the drawings, finish schedule and/or as called for by the various subheadings of this Specification. It also includes all incidental items to affect a complete and finished job even though such items are not shown or particularly mentioned herein.
 - 1. 24" x 48" x 5/8" lay-in panels with exposed grid suspension system.
 - 2. 24" x 24" x 3/4" lay-in panels with exposed grid suspension system.
 - 3. "Woodworks" grille suspended ceiling system as shown on drawings.
 - 4. Furnish and install all ceiling type expansion control details as shown on drawings or as required by code.
 - 5. Additional support for light fixtures complying with part III Cisca (IBC Standards) and NEC current edition.
 - 6. Additional lateral support wires and compression struts as required per IBC current edition and the Latest Cisca Standards for all ceiling areas over one thousand (1,000) sq/ ft. Provide complete shop drawings for Architect's review. Refer to drawings.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Carpentry
- B. Section 07 2400 - Building Insulation
- C. Section 09 2000 - Gypsum Board Assemblies

1.03 REFERENCE STANDARDS

- A. ASTM C635/C635M - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings 2017.
- B. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels 2013.
- C. ASTM E580/E580M - Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions 2020.
- D. ASTM E1264 - Standard Classification for Acoustical Ceiling Products 2014.
- E. ITS (DIR) - Directory of Listed Products current edition.
- F. UL (FRD) - Fire Resistance Directory Current Edition.

1.04 SUBMITTALS

- A. Product Data: Provide data on suspension system components.
- B. Manufacturer's Installation Instructions: Indicate special procedures.

1.05 QUALITY ASSURANCE

- A. This Contractor shall cooperate with all other trades making certain that he has provided allowance for all required mechanical and electrical penetrations throughout the scope of this operation.
- B. All damaged or defective work must be replaced by new material. All other work which becomes injured in the replacing of this Work must be made good by this Contractor. Repaired work will not be accepted.
- C. Coordination, cooperation and instruction shall be furnished other trades in establishing required locations of electric outlets, air grilles, lighting fixtures, inserts, and other details connected with their respective operations, and to the end that completed work shall finish in

true alignment and precise position, with proper support and connections with a minimum amount of cutting and fitting to assemble the whole.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Materials shall be delivered to the project site in the original packages clearly marked with the manufacturer's name. The packaging seals shall be unbroken.

1.07 WARRANTY

- A. this Contractor shall furnish the Owner with a written guarantee that workmanship and materials installed are first-class in every respect, and that he will make good, at his own expense, any defects in such workmanship and materials that may develop within one (1) year from the date of Substantial Completion, and shall be on form bound in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Acoustic Panels:
 - 1. Armstrong World Industries, Inc; []: www.armstrong.com.
 - 2. CertainTeed Corporation; []: www.certainteed.com.
 - 3. Hunter Douglas Contract; []: www.hunterdouglascontract.com.
 - 4. USG; []: www.usg.com.
 - 5. Substitutions: See Section 00 4325 - Product Substitutions.
- B. Suspension Systems:
 - 1. Armstrong World Industries, Inc; []: www.armstrong.com.
 - 2. CertainTeed Corporation; []: www.certainteed.com.
 - 3. Hunter Douglas Contract; []: www.hunterdouglascontract.com.
 - 4. Rockfon, LLC; []: www.rockfon.com.
 - 5. USG; []: www.usg.com.
 - 6. Substitutions: See Section 00 4325 - Product Substitutions.

2.02 ACOUSTICAL UNITS

- A. Acoustical Units - General: ASTM E1264, Class A.
- B. Lay-In Ceiling Panel (Reference AG4)
 - 1. Armstrong, Fissured (no. 755), 24" x 48" x 5/8" mineral lay-in panels.
 - a. Square-edged:
 - b. NRC Range: 50 - .60
 - c. STC Range: 35 - 39
 - d. Light Reflectance: over .75.
 - e. Flame Spread AIMA, Class "A" SS-S-118A (0-25)
 - f. Color: As selected by Architect
- C. Lay-In Ceiling Panel (Reference AG2)
 - 1. Armstrong, Cirrus, 24" x 24" x 3/4" mineral lay-in panels.
 - a. Tegular-edged:
 - b. NRC Range: 75
 - c. STC Range: 35 - 39
 - d. Light Reflectance: over .75
 - e. Flame spread AIMA, Class "A" 55-5-119A (0-25)
 - f. Color: As selected by Architect
- D. Woodworks Grille (Reference AGW)
 - 1. Armstrong Woodworks Grille - Backer and Dowel Combination
 - 2. 1 3/8" slat height
 - 3. Color as selected by Architect
 - 4. Panel backers and support system color to be Black

2.03 SUSPENSION SYSTEM(S)

- A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required.
 - 1. Non-rated 15/16" DX exposed grid system for 24" x 24" and 24" x 48" lay-in panels.
 - a. Main Runners: Donn X-26
 - b. Cross Tees 4'-0" Long: Donn DX-416
 - c. Cross Tees 2'-0" Long: Donn DC-216
 - d. Provide a white enameled steel cap for the interior suspension system.
 - e. Wall Angle: .025 steel enameled white wall angle around entire perimeter.
 - f. Compression Struts: As per Cisca requirements. (Comparable steel studs may be used; verify with the Architect.)
 - 2. Suspension and lateral bracing wire: No. 12 ga. SWG galvanized steel wire.
 - 3. Additional requirements for suspension system.
 - a. Must comply with IBC Section 808 and Section 2506.2.1 for seismic design. Refer to General Structural Notes for seismic design category.
 - b. A heavy duty T-bar grid system shall be used.
 - c. Perimeter angle shall be not less than 1". Perimeter angle shall be drilled and anchored to masonry or concrete walls with approved fasteners or alternate method as accepted by the Architect. Powder actuated fastening will not be allowed. Provide seismic clips as required.
 - d. The grid shall be attached at two (2) adjacent walls.
 - e. Opposite walls must have minimum required clearance and not attached.
 - f. Spacer bars must be installed on the unattached ends of the cross runner 8" or less from the end of the cross runner members.
 - g. Ceiling areas over one thousand (1,000) sq. ft. must additionally have four (4) wire splay bracing starting from 6'-0" from the perimeter walls and continuing at 12'-0" centers.
 - h. Compression posts are required at each splay bracing point.
 - i. Ceiling areas over twenty-five hundred (2,500) sq. ft. must have "seismic separation joints" or full height partitions.
 - j. Color: As selected by Architect from Manufacturer's standard color options.

2.04 ACCESSORIES

- A. Steel Stud System (vertical seismic struts) shall be type, gauge and size as shown on drawings.
 - 1. Dietrich Industries. www.deitrichindustries.com
 - 2. Cemco. www.cemcosteel.com
 - 3. SCAFCO Corporation. www.scafco.com
 - 4. Steel Studs: Shall be type, gauge and size as shown on drawings.
- B. Expansion Control Products
 - 1. MM Systems, Model No. DX-200. www.mmsystemscorp.com
- C. Provide removable ceiling components at heat pumps located above acoustical ceilings as shown on drawings.
- D. Perimeter Moldings: Same material and finish as grid.

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 ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

- B. Layout shall conform to the ceiling plans shown on the drawings. Other components integrate into ceiling which will not allow deviation of layout. System to meet heavy-duty standard.
- C. Hanger wires shall be No.12 soft annealed wire supported from steel joist structure. Spacing of wires for all suspended grid system ceilings shall not exceed 4'-0" o.c. each way. Splayed hangers may be provided. Hanger wires shall be installed with a minimum of three turns around itself, both top and bottom. Hanging wires greater than fifteen degrees (15°) out of plumb shall be splayed by bracing, counter-splaying or trapeze supports. Wires shall not be attached to or come in contact with any component of the mechanical or plumbing system.
- D. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.
- E. Anchorage must be capable of supporting a minimum of 300 lbs each.
- F. Main T-Runners shall be installed 4'-0" o.c., supported at 8" from the wall and every 4' by wire or steel strap hangers. The grid shall be leveled to within 1/8" in twenty feet. Cross-tees shall be installed 2'-0" o.c. at right angles to the main "T" runners.
 - 1. Additional lateral force support bracing wires as required for ceiling system, light fixtures, partition head loads, mechanical air terminals, etc., shall comply with IBC 2009 and the latest CISC Standards. In case of conflict adhere to most stringent requirements as accepted by the Architect and without extra cost to the Owner.
- G. Tee Sections shall be locked in place at intersections. A metal edge molding finished to match the Tee Sections shall be installed wherever the suspended grid abuts walls and other vertical surfaces. Tee Sections intersecting moldings shall be locked in place. The acoustical material shall be installed in the suspension system and hold downs attached (where required).
- H. Grid system shall be straight in alignment, and exposed surfaces shall be flush and level. Any deviation from layout design shall be approved by the Architect prior to installation.
- I. Ceiling diffusers shall be centered on ceiling panels.
- J. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
 - 1. Use longest practical lengths.
 - 2. Overlap and rivet corners.

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.
- G. Where round obstructions occur, provide preformed closures to match perimeter molding.
- H. Acoustical tile on gypsum board shall be cemented in place as herein specified. Each tile shall have not less than each corner contacted with a pat of cementing materials at least 2" in diameter. The tiles shall be placed in position by using a forward and backward motion and at the same time pressing the tiles toward the contact surfaces. Layout shall be as shown for tiles on drawings.

3.04 CLEANING

- A. After installation has been completed, this Contractor shall clean entire surface, removing any discoloration or foreign matter, and shall replace tiles which are damaged or stained.

END OF SECTION

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**SECTION 09 6500
RESILIENT FLOORING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, tools and services required to fully complete installation of all Rubber Base work as is indicated on the drawings and/or specified herein including, but not limited to, the following described items.
- C. Preparation of floor surfaces as required by flooring manufacturer

1.02 RELATED WORK

- A. Section 03 3000 - Cast-in-Place Concrete
- B. Section 09 6800 - Floor Carpet

1.03 REFERENCE STANDARDS

- A. ASTM E 648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2008b.
- B. ASTM F 710 - Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring; 2008.
- C. ASTM F 1066 - Standard Specification for Vinyl Composition Floor Tile; 2004.
- D. ASTM F 1861 - Standard Specification for Resilient Wall Base; 2008.
- E. FS RR-T-650 - Treads, Metallic and Nonmetallic, Skid Resistant; Federal Specifications and Standards; Revision E, 1994.
- F. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2006.
- G. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition; www.aqmd.gov <<http://www.aqmd.gov>>.
- H. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Master Painters and Decorators Association; 2004.

1.04 SUBMITTALS

- A. Samples: Refer to Section 01 3300 - Submittals.
- B. Product data for contractor provided materials.
- C. Documentation from flooring manufacturer that contractor is an approved installer of their products.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Contractor provided materials shall be delivered to the project site in the original packages clearly marked with the manufacturer's name. The packaging seals shall be unbroken.
- B. Owner provided materials will be delivered to the project site in original packaging and turned over to the flooring contractor to be installed. Flooring contractor will take steps necessary to protect owner provided materials from damage and theft as if they had been purchased by the contractor.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer certified in writing by the flooring manufacturer to be qualified for installation of specified flooring system.
 - 1. Flooring contractor will be required to demonstrate manufacturer approval to install the products listed in this Section. Evidence of such approval must be received during submittal review process.

1.07 WARRANTY

- A. This Contractor shall furnish the Owner with a written guarantee that workmanship and contractor provided materials installed are first-class in every respect, and that he will make good, at his own expense, any defects in such workmanship and contractor provided materials that may develop within one (1) year from the date of Substantial Completion, and shall be on form bound in Section 01 7836 - Form of Guarantee

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Rubber Base: Contractor Provided, Contractor Installed
 - 1. Burke
 - 2. Johnsonite
 - 3. Roppe

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
- 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 concrete sub-floor surfaces are dry enough and ready for resilient flooring installation by testing for moisture emission rate and alkalinity in accordance with ASTM F 710; obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare sub-floor surfaces as recommended by flooring and adhesive manufacturers.
- B. 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.
- C. Prohibit traffic until filler is cured.
- D. Clean substrate.
- E. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed. Apply primer to wall surfaces.

3.03 INSTALLATION

- A. Rubber Base
 - 1. Fit joints tightly and make vertical. Maintain minimum dimension of 18" (45 mm) between joints.
 - 2. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
 - 3. Install base on solid backing. Bond tightly to wall and floor surfaces.
 - 4. Scribe and fit to door frames and other interruptions..

3.04 CLEANING

- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
- B. Clean in accordance with manufacturer's instructions.

END OF SECTION 09 65 00

**SECTION 09 6800
FLOOR CARPET**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section
- B. Furnish all labor, materials, equipment, tools and services required to fully complete installation of all Floor Carpeting work as is indicated on the drawings and/or specified.

1.02 RELATED WORK

- A. Section 03 3000 - Cast-in-Place Concrete
- B. Section 09 6500 - Resilient Flooring.

1.03 REFERENCE STANDARDS

- A. ASTM E648 - Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source; 2014c.
- B. NFPA 253 - Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source; National Fire Protection Association; 2015.

1.04 SUBMITTALS

- A. Samples: Refer to Section 01 3300 - Submittals.
- B. Product Data: Product data for contractor provided materials.
- C. Documentation from flooring manufacturer that contractor is an approved installer of their products.
- D. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer certified in writing by the flooring manufacturer to be qualified for installation of specified flooring system.
 - 1. Flooring contractor will be required to demonstrate manufacturer approval to install the products listed in this Section. Evidence of such approval must be received during submittal review process.

1.06 DELIVERY AND STORAGE:

- A. Contractor provided materials shall be delivered to the project site in the original packages clearly marked with the manufacturer's name. The packaging seals shall be unbroken.
- B. Owner provided materials will be delivered to the project site in original packaging and turned over to the flooring contractor to be installed. Flooring contractor will take steps necessary to protect owner provided materials from damage and theft as if they had been purchased by the contractor.
- C. Store materials in area of installation for minimum period of twenty-four (24) hours prior to installation.
- D. Maintain the temperature of the installation site, carpet, and adhesive between a minimum temperature of sixty-five degrees (65°) F and a maximum temperature of ninety-five degrees (95°) F for twenty-four (24) hours before installation. Do not begin the installation if the room or subfloor temperature is below sixty-five degrees (65) F. The adhesive will not function properly when applied over an extremely cold surface. Relative humidity should not exceed sixty-five percent (65%). Maintain these conditions for twenty-four (24) hours prior to, during and twenty-four (24) hours after installation.
- E. Ventilate installation area during installation and for seventy-two (72) hours after installation.

1.07 WARRANTY:

- A. Provide five (5) year written guarantee on installation by floor covering installer. Guarantee shall cover defects in workmanship and include statement that flooring installer shall, at no additional expense to Owner and upon written notice from Owner, promptly correct or replace improper work that may become apparent within sixty (60) months after date of final completion. Installer shall complete corrective work within fifteen (15) days of receipt of Owner's written notice unless other arrangements are made in writing with Owner.
- B. This Contractor shall furnish the Owner with a written guarantee on form bound in Section 01 7836 - Form of Guarantee.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Floor Carpet
 - 1. The following manufacturers are approved to bid this project with their respective products as noted or of similar pricing group
 - a. Mannington
 - b. Mohawk GT341 Digital Terrain
 - c. Patcraft Cube & Colour I0426
 - d. Shaw Engage Tile
 - e. Tandus Centiva Ethos Modular with Omniccoat Technology
 - 2. Tile size: 24" x 24"
 - 3. Critical Radiant Flux: Class 1, when tested in accordance with ASTM E648 or NFPA 253

2.02 ACCESSORIES

- A. All accessories and miscellaneous materials required to make a complete installation are to be provided by the contractor.
- B. Sub-Floor Filler: Type recommended by carpet manufacturer.
- C. Resilient Transition Strips:
 - 1. Manufacturers:
 - a. Johnsonite, Inc: www.johnsonite.com.
 - b. Roppe Corporation: www.roppe.com.
 - c. Substitutions: See Section 00 4325 - Product Substitutions.
 - 2. Material: Polyvinyl chloride (PVC)
 - 3. Carpet to Concrete: CTA-XX-P manufactured by Johnsonite, Inc.

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 carpet.
- B. Verify that sub-floor surfaces are dust-free and free of substances that could impair bonding of adhesives to sub floor surfaces.
- C. Cementitious Sub-floor Surfaces: Verify that substrates are dry enough and ready for flooring installation by testing for moisture and alkalinity (pH).
 - 1. Obtain instructions if test results are not within limits recommended by flooring material manufacturer and adhesive materials manufacturer.
- D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION

- A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of floor coverings.

3.03 INSTALLATION

- A. Starting installation constitutes acceptance of sub-floor conditions.

- B. Install carpet and cushion in accordance with manufacturer's instructions.
- C. Verify carpet match before cutting to ensure minimal variation between dye lots.
- D. Lay out carpet and locate seams in accordance with shop drawings.
 - 1. Locate seams in area of least traffic, out of areas of pivoting traffic, and parallel to main traffic.
 - 2. Do not locate seams perpendicular through door openings.
 - 3. Align run of pile in same direction as anticipated traffic and in same direction on adjacent pieces.
 - 4. Locate change of color or pattern between rooms under door centerline.
 - 5. Provide uniform color, pattern, and texture match within any one area.
- E. Install carpet tight and flat on subfloor, well fastened at edges, with a uniform appearance.

3.04 CLEANING AND PROTECTION

- A. Remove excess adhesive from floor and wall surfaces without damage.
- B. Clean and vacuum carpet surfaces.

END OF SECTION 09 68 00

**SECTION 09 9000
PAINTING**

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, transportation, scaffolding, services, etc., necessary for painting and finishing all surfaces, interior and exterior, as shown on the drawings, in the finish schedule or herein specified to make a thoroughly complete job in every respect.
- C. Principal items of work.
 - 1. Samples and benchmark surfaces for each condition shall be approved by the Owner/Architect prior to proceeding.
 - 2. Preparation of surfaces.
 - a. Caulking interior intersections of gypsum board walls with dissimilar materials prior to painting.
 - b. Painting or sealing of all interior surfaces of building, scheduled to receive painting.
 - c. Painting of all exposed structure, piping, conduit and ductwork which occur in finished rooms, or as specified on the drawings.
 - d. Painting or sealing of all exterior surfaces on building scheduled for paint, including:
 - 1) All hollow metal doors and frames
 - 2) Steel louvers, frames, lintels, galvanized flashing, pipe bumpers, signage, gates, piping, ductwork, etc.
 - 3) Refer to Finish Schedule, Door Schedule and Reflected Ceiling Plan.
 - e. Clean-up and disposal of all debris associated with this Work.

1.02 RELATED WORK

- A. The following surfaces are not to receive painter's finishes or the finishing work shall be performed by others.
 - 1. Work having complete shop and finish coats other than prime coat, including porcelain enameled steel, registers, grilles, diffusers, etc.
 - 2. Aluminum entrances and storefront, stainless steel, brass, bronze, and plated finished metals (zinc, cadmium, or galvanized metals will require painting).
 - 3. Finish hardware, except prime coated items.
 - 4. Resilient floor finishes.
 - 5. Acoustical treatment.
 - 6. Protective coatings.
 - 7. Shop prime coats except touch-up as required.
 - 8. Surface preparation work for concrete tilt up walls which are to be painted.
 - 9. Painting of automatic sprinkler heads.
- B. The following Sections have related work that is not part of this Section.
 - 1. Section 06 4000 - Prefinished Cabinets and Trim
 - 2. Section 09 2000 - Gypsum Board Assemblies

1.03 REFERENCE STANDARDS

- A. GreenSeal GS-11 - Architectural Paints; 1993.
- B. MPI (APL) - Master Painters Institute Approved Products List; Master Painters and Decorators Association; current edition, www.paintinfo.com <<http://www.paintinfo.com>>.
- C. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Master Painters and Decorators Association; 2004.

1.04 SUBMITTALS

- A. Refer to Sections 01 3300 - Submittals
- B. Samples and Colors

1. Color chips for each color will be furnished to the Architect by this Contractor. Sample shall be marked as follows:
 - a. Color, number, and name of color.
 - b. Manufacturer's name and type of paint (latex, oil, vinyl, etc.).
 - c. Number of coats required.
 - d. Brief description of the location of the surface to be painted (room, ceiling, wainscot, east wall, west wall, etc.).
 - e. Contractor's name, date submitted for review and submitter's initials.

1.05 DELIVERY AND STORAGE

- A. Delivery
 1. All paint shall be delivered to site in manufacturer's sealed containers. Each container shall be clearly labeled by the manufacturer. Labels shall give manufacturer's name, type of paint, and color of paint and instructions for application.
- B. Storage
 1. All materials on the job shall be stored in a single place designated by the General Contractor.
 2. This Contractor shall be responsible for keeping the storage place neat and clean.
 3. This Contractor shall be responsible for the repair of any damage by this Contractor to the area or its surroundings.
 4. All soiled or used rags, waste, etc. must be removed from the Project Site at the end of each work day, and every precaution taken by this Contractor to avoid the danger of fire.

1.06 GUARANTEE

- A. Furnish three (3) copies of a written guarantee for all labor and material for a period of one (1) year from the date of Substantial Completion. Refer to Section 01 7836 - Form of Guarantee

PART 2 - PRODUCTS

2.01 MATERIALS

- A. The term, "Paint," as used herein includes emulsions, enamels, oil paints, stains, varnishes, sealers, various latex, plastic, rubber base paints and similar coatings. All paint specifications are as manufactured by Sherwin Williams, unless noted otherwise.
- B. Paint
 1. Pigments shall be well ground.
 2. Paint shall not settle badly, cake or thicken in containers.
 3. Paint colors shall be as scheduled by the Architect after receipt of submittals.
 4. Job site thinning or mixing shall not be allowed.
 5. No claim by this Contractor as to the unsuitability of any material specified, or to produce first-class work with the same will be entertained, unless such claim is made in writing seven (7) days prior to the time of bidding.
- C. Masking Materials
 1. Masking tape.
 2. Masking film.

2.02 ACCEPTABLE MANUFACTURERS

- A. The following manufacturers of paint products are considered acceptable.
 1. Glidden (ICI) Paints
 - a. Devoe Paint www.devoe.com
 - b. Fuller O'Brien Paints www.fullerpaint.com
 2. Sherwin-Williams Paints www.sherwin-williams.com
 3. Porter Paints www.porterpaints.com
 4. Kwal Paint www.kwalpaint.com

2.03 EXTERIOR PAINT - FULLER O'BRIEN, BASE SPECIFICATION

- A. Metal Surfaces on Exterior

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1. Including structural Steel, hollow metal doors and frames, signage posts, gates, pipe bumpers, etc. Repair and touch up prime coat only as required or in unprimed.
One (1) coat #13101 Mirrolac Rust Inhibiting Metal Primer. (Touch up or if unprimed).
Two (2) coats #83XX, Mirrolac-WB Semi Gloss Enamel

One (1) coat SW B66W310 Procryl Universal Acrylic Prime.
Two (2) coats SW B66W300 Shercryl High Performance Acrylic.

2.04 INTERIOR PAINT - SHERWIN-WILLIAMS, BASE SPECIFICATION

A. Semi-Gloss Finish

1. New interior ferrous metal work, hollow metal doors and frames, louvers, steel columns, etc. Repair, touch-up prime coat only as required or if unprimed.

One (1) coat SW B66W310 Procryl Universal Acrylic Primer.
Two (2) coats SW B66W300 Shercryl High Performance Acrylic.

B. Flat Finish (Ceilings Only)

1. Gypsum board.
 - a. Spray application only - do not backroll.

One (1) coat Promar High Holdout Latex Wall Primer B28WY2000.
Two (2) coats SW PROMAR 200 Zero VOC Interior Latex Flat, B30W2650.

C. Semi-Gloss Finish

1. Gypsum board. (Paint and painted graphics)
 - a. Spray application only - do not backroll.

One (1) coat Promar High Holdout Latex Wall Primer B28WY2000.
Two (2) coats SW PROMAR 200 Zero VOC Interior Latex Semi-Gloss, B31W2650.

D. Epoxy Finish

1. Gypsum board/concrete.
 - a. Spray application only - do not backroll

One (1) coat SW INT/EXT Block Filler, B25W25 (concrete)
Two (2) coats SW Pro Industrial Pre Catalyzed Water Based Epoxy K46W51.

E. Primer for Gypsum Board

1. Walls which are scheduled for wall covering.
 - a. Apply with brush, roll or spray with maximum coverage of four hundred (400) sq. ft. per gallon.
 - b. Allow twenty-four (24) hours to dry.

Primer: One (1) coat SW PROMAR Hi Holdout Latex Wall Primer B2BWY2000

F. Exposed Sealed Brick Veneer and Colored, Honed Masonry Walls

Two (2) coat Prosoco Blok-Guard & Graffiti Control Ultra (clean as per manufacturer's recommendations).

G. Semi-Gloss Finish: Exposed steel roof structure, piping, ductwork, conduits, etc.

One (1) coat Mirrolac Rust Penetrating Metal Primer, No.13101
Two (2) coats Waterborne Acrylic Dryfall B42W2 Eg-Shel Finish.

- H. Stain and Finish: Hardwood trim, etc. SW "Wood Classics" oil wood stain (as selected by the Architect) two (2) coats "Wood Classics" stain oil varnish (rubbing), light sanding between coats are required.

1. Alternate manufacturers as accepted by the Architect.

- I. Painted Concrete Floors (Finish Note PC)

1. Provide H & C Shark Grip slip resistant additive at all shop floors to receive painted concrete.

One (1) coat B58T101 Macropoxy 920 Preprime
Two (2) coats B65 Armorseal High Solids Floor Enamil. (Color as selected by Architect from manufacturer's standard colors).

2.05 FINISHES NOT SCHEDULED ON DRAWINGS

- A. General

1. Except as specifically excluded, where painting is scheduled for an area or space, finish exposed ducts, fire protection piping, conduits, ferrous or galvanized metal work, and other features not specifically designated, to match adjacent or continuous painted walls or ceiling, regardless of factory finish or material.

- B. Prime Coated Hardware

1. Paint same as continuous painted work.

- C. Other Miscellaneous Areas, Spaces, Surfaces

1. Where finish is not scheduled or described herein, but is shown and called for on the drawings, finish is not specifically excluded from the Work of this Section. A minimum requirement shall be of two (2) coats of same material specified or scheduled for similar areas or spaces or surfaces.

2.06 MAINTENANCE PAINT

- A. Provide one (1) gallon of each color and type of paints used.

- B. Supply the Architect with a copy of signed receipt giving evidence of delivery of maintenance paint to Owner's authorized representative.

2.07 CAULKING AND SEALANTS

- A. General Interior Sealant

1. Tremco Spectrum 1, one (1) part silicone joint sealant.
2. Complies with ASTM C-920 and Federal Specification TT-S-001543A.
3. Custom color as selected by the Architect.
4. Do not use any polyurethane sealant in any interior application.

- B. Acceptable Manufacturers

1. Dow Corning: www.dowcorning.com <<http://www.dowcorning.com>>
2. Bostik: www.bostik-us.com <<http://www.bostik-us.com>>
3. Sika Corp.: www.sika.com <<http://www.sika.com>>
4. Pecora Corp.: www.pecora.com <<http://www.pecora.com>>
5. Sherwin-Williams: www.sherwin-williams.com <<http://www.sherwin-williams.com>>

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine surfaces to be painted before beginning painting work.

- B. Work of other trades that has been left or installed in a condition not suitable to receive paint, stain, or other specified finish shall be repaired and corrected by the responsible trade before painting. Painting of defective or unsuitable surfaces implies acceptance of the surface.
- C. Corrective action to gypsum board shall be done under the gypsum board work, Section 09 20 00, "Gypsum Board Assemblies."

3.02 PREPARATION

- A. Perform preparation and cleaning procedures in strict accordance with coating manufacturer's instructions for each substrate.
- B. Concrete surfaces shall be dry, clean, and free of dirt, efflorescence, encrustation, and other foreign matter. Glazed surfaces on concrete shall be roughened or etched to uniform texture.
- C. Clean ferrous metal of oil, grease, and foreign matter.
- D. Wire-brush and scrape metal to remove loose primer and rust.
- E. Solvent clean galvanized metal with lacquer thinner and then retreat with an etching-type solution if recommended by paint manufacturer. Prime galvanized metal the same day that cleaning has been performed.
- F. Remove hardware and accessories, machined surfaces, plates, lighting fixtures, or provide protection. Reinstall removed items upon completion of work in each area.
- G. Thoroughly clean and degloss existing surfaces to be recoated prior to painting. Spot prime patched and bare areas.
- H. Prior to priming, clean bars and covered pipes, ducts, hangars, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical and electrical work.
- I. Perform preparations of other surfaces following specific recommendations of coatings manufacturer.
- J. Bond breakers and curing agents shall be removed and surfaces cleaned before primers, sealers, or finish paints are applied. Refer to manufacturers recommendations.
- K. Gypsum board surfaces shall be completely dry and dust-free before painting. Use appropriate light or medium tack masking tape, refer to 3.1.C.

3.03 PROTECTION

- A. Protect previously installed work and materials which may be affected by work of this Section.
 - 1. Protect prefinished surfaces, landscaping, and adjacent surfaces against paint and damage.
 - 2. Furnish drop cloths, shields, and protective methods to prevent spray or splatter from surfaces not being painted.
 - 3. Protect surfaces, equipment, and fixtures from damage resulting from use of scaffolding, planking, and staging.
 - 4. Protect sprinkler heads from paint and overspray. Remove all protection when finished. All painted or oversprayed heads will be replaced at the cost of this Contractor.
- B. Provide WET PAINT signs, barricades, and other devices required to protect newly finished surfaces.

3.04 APPLICATION

- A. Prepare benchmark surfaces (one hundred (100) sq. ft. minimum) at locations agreed upon with Owner/Architect which shall, when approved, be the standard for the project. Note that larger nap rollers and heavy stippling on the paint are unacceptable.
- B. Refer to and follow guidelines for painting procedures outlined by the Painting and Decorating Contractors of America (PDCA).
- C. Apply painting and finishing materials in accordance with the manufacturer's instructions. Use applicators best suited for the material and surfaces to which applied.
 - 1. Number of coats specified is the minimum to be applied. Apply additional coats when undercoats, stains, or other conditions show through final finish coat, until paint film is of

- uniform finish and color is acceptable to the Architect.
- 2. Tint undercoats slightly too approximate color or finish coat.
- D. Apply each material at not less than the manufacturer's recommended spreading rate.
 - 1. Apply a total dry film thickness of not less than 1/2 mils for each required coat.
- E. Apply prime coat to substrate which is required to be painted or finished.
- F. Finish doors on top, bottom, and edges same as faces.
- G. Sand lightly and dust clean between succeeding coats.

3.05 CLEANING, TOUCH-UP, AND REFINISHING

- A. Remove spattering, spots, and blemishes from surfaces.
- B. Upon completion of painting work, remove trash, paint cans, and other related materials. Leave areas in a clean, orderly condition.
- C. Touch-up, refinish, or repaint as necessary, runs, sags, misses, holiday stains, and other defects in the painted surfaces, including inadequate coverage and mil thickness.

END OF SECTION 09 90 00

**SECTION 10 1400
IDENTIFYING DEVICES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Provide all labor, materials, equipment, services, and transportation to manufacture, furnish and install all Identifying Devices as shown on the drawings or specified herein complete.
 - 1. Building Monument sign. Refer to Site Development (SD Sheets).
 - 2. Back-Lit Channel Building Letters
 - 3. Accessible and fire exit signs. Refer to Details and Architectural Sheets for locations. Note that all signage shall comply with all ADA requirements.
 - 4. Plastic laminate signage at interior doors. Note that all interior signage shall comply with all ADA requirements.
 - 5. Parking lot signs. Refer to Site Development (SD Sheets) and civil drawings.
 - a. "Reserved Parking - Van Accessible Parking Only"
 - b. Stop signs and Off Site City required signage as shown on Civil drawings.
 - c. "One Way" "Do Not Enter" signs
 - 6. Provide necessary mounting accessories and fastenings.

1.02 RELATED REQUIREMENTS

- A. Section 05 5000 - Metal Fabrications

1.03 REFERENCE STANDARDS

- A. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design 2010.
- B. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

1.04 SUBMITTALS

- A. Product Data: Manufacturer's printed product literature for each type of sign, indicating sign styles, font, foreground and background colors, locations, overall dimensions of each sign.
- B. Signage Schedule: Provide information sufficient to completely define each sign for fabrication, including room number, room name, other text to be applied, sign and letter sizes, fonts, and colors.
- C. Selection Samples: Where colors are not specified, submit two sets of color selection charts or chips.
- D. Manufacturer's Installation Instructions: Include installation templates and attachment devices.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Package signs as required to prevent damage before installation.
- B. Cast Aluminum Letters
 - 1. Skin package all letters to protect them until installation.

1.07 WARRANTY

- A. Furnish written one (1) year guarantee for materials and installation from date of Substantial Completion. The Form of Guarantee shall be as set forth in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flat Signs:

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1. Architectural Signs & Engraving (ASE Inc.), Orofino, ID. www.asesigns.com
 2. ASI Sign Systems: www.asisignage.com
 3. Best Sign Systems, Inc; []: www.bestsigns.com.
 4. Kroy Architectural Signing: www.kroy.com
 5. Thomas and Sons LLC: www.thomasandsonslc.com
 6. Rainbow Sign & Banner: www.rainbowsign.net
 7. Star Sign & Banner: www.starsignonline.com
 8. Others desiring to bid may do so by following the requirements of Section 00 4325 - Product Substitutions
- B. Back-lit Channel Letter Signs:
1. A.R.K. Ramos Signage Systems: www.arkamos.com
 2. Rainbow Sign & Banner: www.rainbowsign.net
 3. Star Sign & Banner: www.starsignonline.com
 4. Metal Arts: www.metalarts.net
 5. Southwell Co.: www.southwellco.com
 6. Others desiring to bid may do so by following the requirements of Section 00 4325 - Product Substitutions
- C. Building Monument Sign:
1. Rainbow Sign & Banner: www.rainbowsign.net
 2. Star Sign & Banner: starsignonline.com

2.02 ACRYLIC SIGNAGE

- A. ADA Compliant Signs
1. Refer to drawings for locations.
 2. Shall be 6" square of 1/8" acrylic plastic, with white logo, background color as selected by the Architect. Radius all corners.
 3. Signs shall comply with all ADA requirements, (Grade II Braille).
- B. Fire Exit Signs
1. Refer to drawings for locations.
 2. Shall be 6" square of 1/8" acrylic plastic, red background with white logo. Radius all corners.
 3. Signs shall comply with all ADA requirements, (Grade II Braille).
- C. Contractor shall supply one room name sign for each door in the project (except for building entry doors) and at other locations noted on the drawings. Refer to floor plans, interior elevations and details. Provide exterior grade signs for doors that occur outside the building. Room name on sign shall be the name of the room entered into from a circulation, lobby, or similar open space.

2.03 BACK-LIT CHANNEL LETTERS

- A. Refer to Exterior Elevations
- B. Text Font and Size: As noted on Elevations
- C. General
1. Metal shall be free of all porosity and with sharp corners, flat faces and accurate profiles.
 2. Remove burrs and rough spots.
 3. Belt polish all faces to uniform high luster finish.
 4. Sides shall be filed smooth with all tool marks removed by fine abrasive grain air blasting.
 5. Each letter shall be cleaned ultrasonically in a special degreasing bath using high frequency sound waves.
- D. Aluminum
1. Metal shall be solid aluminum cast of Certified Aluminum Association's alloy designations B514.0 (formerly Alloy 214 S), conforming to Federal Specifications QQ-A601d or QQ-A596d.
- E. Finish

1. All letters shall be mechanically sanded, etched and degreased prior to receiving finish.
 2. The exterior letters shall have either baked enamel Type F-3 finish or a clear anodized Type F-4 finish, which shall conform to the Aluminum Association's Finish Specifications. The color shall be as selected by the Architect.
- F. Mounting
1. Mounting shall be type FM 4, flush mount with threaded studs set in adhesive.

2.04 SITE SIGNS

- A. Refer to drawings for types and locations
- B. Shall be formed from sixteen (16) ga. galvanized paint lock steel.
- C. Paint
1. One (1) coat rustoleum primer.
 2. Two (2) coats synthetic automotive enamel.
 3. Letters shall be painted with two (2) coats bulletin paint. See details for color, verbiage and layout.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces are ready to receive work.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install neatly, with horizontal edges level.
- C. Securely attach to supporting structure, in accordance with manufacturer's instructions, and this Specification.
- D. Locate signs and mount at heights indicated on drawings and in accordance with ADA Standards and ICC A117.1.
1. Coordinate location of signs with Architect.
- E. Protect from damage until Substantial Completion; repair or replace damaged items.

3.03 CLEANING AND PROTECTING

- A. Cleaning
1. At completion of the installation, clean all surfaces in accordance with manufacturer's instructions.
- B. Protection
1. Protect units from damage until accepted by the Owner.
 2. Repair or replace damaged units as directed by the Architect.

END OF SECTION

**SECTION 10 2813
TOILET ROOM ACCESSORIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Furnish all labor, materials, equipment, services and transportation necessary to furnish and install all toilet room and miscellaneous accessories as shown on the drawings or specified herein.
 - 1. Grab bars.
 - 2. See Toilet Room Accessory Schedule and elevations.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Carpentry: Provide wood backing.
- B. Section 08 8000 - Glass and Glazing: Mirrors.
- C. Section 09 2000 - Gypsum Board Assemblies: Preparation of openings in gypsum board walls.
- D. Section 09 3000 - Tiling
- E. Section 22 0000 - Plumbing
- F. The following shall be supplied by the Owner.
 - 1. Towel dispenser.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.
- B. ASTM A269/A269M - Standard Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service 2015a.
- C. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2015, with Editorial Revision (2016).
- D. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar 2015.
- E. ASTM B456 - Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium 2017.

1.04 SUBMITTALS

- A. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.
- B. Manufacturer's Installation Instructions: Indicate special procedures and conditions requiring special attention.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design: Bobrick Washroom Equipment: www.bobrick.com.
- B. Other Acceptable Manufacturers:
 - 1. AJW Architectural Products; []: www.ajw.com.
 - 2. ASI - American Specialties, Inc; []: www.americanspecialties.com.
 - 3. Bradley Corporation; []: www.bradleycorp.com.
 - 4. GAMCO (a division of Bobrick): www.gamcousa.com
 - 5. Others desiring to bid may do so by following the requirements of Section 00 4325 - Product Substitutions
- C. All items of each type to be made by the same manufacturer.

2.02 TOILET ROOM ACCESSORIES

- A. Toilet Paper Dispenser: Bobrick Part #B-2888 or equal
- B. Soap Dispenser: Sloan deck mounted foam soap dispenser, polished chrome finish, Part #ESD-2000-CP. Refer to Plumbing drawings for additional information.
- C. Mirrors: By Section 08 8000 - Glass and Glazing
- D. Grab Bars: Stainless steel, nonslip grasping surface finish.
 - 1. Basis of Design: Bobrick Model No. B6806
 - 2. Standard Duty Grab Bars:
 - a. Dimensions: 1 1/2 inch (38.1 mm) outside diameter, minimum 0.05 inch (1.3 mm) wall thickness, exposed flange mounting, 1-1/2 inch (38 mm) clearance between wall and inside of grab bar.
 - b. Length and Configuration: As indicated on drawings.
- E. Sanitary Napkin Disposal Unit: Stainless steel, surface-mounted, self-closing door, locking bottom panel with full-length stainless steel piano-type hinge.
 - 1. Basis of Design: Bobrick Model No. B270

2.03 UTILITY ROOM ACCESSORIES

- A. Mop and Broom Holder: Stainless Steel; surface mounted
 - 1. Basis of Design: Bobrick B-223
 - 2. Length as indicated on drawings

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify exact location of accessories for installation.
- C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.

3.02 PREPARATION

- A. Deliver inserts and rough-in frames to site for timely installation.
- B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION

- A. Install accessories in accordance with manufacturers' instructions in locations indicated on the drawings.
- B. Install plumb and level, securely and rigidly anchored to substrate.
- C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.
 - 1. Grab Bars: As indicated on the drawings.
 - 2. Other Accessories: As indicated on the drawings.

3.04 PROTECTION

- A. Protect installed accessories from damage due to subsequent construction operations.

END OF SECTION

**SECTION 10 4413
FIRE EXTINGUISHERS AND CABINETS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Provide all labor, materials, equipment, services, transportation, etc. to furnish and install all fire extinguishers with all cabinets as shown on the drawings or specified herein.
 - 1. For location and type of extinguishers, refer to drawings.
 - 2. Refer to detail on drawings for cabinet mounting.
 - 3. Colors as required by Utah OSHA.
- C. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 06 1000 - Carpentry: Wood blocking product and execution requirements.

1.03 REFERENCE STANDARDS

- A. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems 2013a (Reapproved 2017).
- B. FM (AG) - FM Approval Guide current edition.
- C. NFPA 10 - Standard for Portable Fire Extinguishers 2013.
- D. UL (DIR) - Online Certifications Directory Current Edition.

1.04 SUBMITTALS

- A. Product Data: Provide extinguisher operational features.
- B. Manufacturer's Installation Instructions: Indicate special criteria and wall opening coordination requirements.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 WARRANTY

- A. This Installer shall provide a written guarantee of all fire extinguishers and fire extinguisher cabinets for a period of one (1) year from the date of Substantial Completion. The Form of Guarantee is included in Section 01 7836 - Form of Guarantee.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Extinguishers, Cabinets and Accessories:
 - 1. Ansul, a Tyco Business: www.ansul.com.
 - 2. JL Industries, Inc: www.jlindustries.com.
 - 3. Kidde, a unit of United Technologies Corp: www.kidde.com.
 - 4. Larsen's Manufacturing Co: www.larsensmfg.com.
 - 5. Potter-Roemer: www.potterroemer.com.
 - 6. Other desiring to bid may do so by following the requirements of Section 00 4325 - Product Substitutions

2.02 FIRE EXTINGUISHERS

- A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
- B. Extinguishers marked FE1 on drawings:
 - 1. Basis of Design: Larsen's Model No. MP-10, Type "ABC" Extinguishers
 - 2. Shall be ten (10) lbs. stored pressure dry powder type extinguishers with minimum 40 BC U. L. Rating.

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- a. Cabinet
 - 1) Shall be semi-recessed Type 2409-R4 extinguisher cabinets which is 13" x 27-1/2" (outside dimensions). See detail on drawings.
 - 2) Twenty (20) ga. steel box.
 - 3) Door style shall be steel with break glass (breakaway acrylic panel) with built-in key-operated lock.
 - 4) Finish on door and cabinet shall be white.
- C. Extinguishers marked FE2 on drawings:
 - 1. Basis of Design: Shall be Larsen's Model No. MP-10 Type "ABC", ten (10) lbs. extinguisher with minimum 40 BC U.L. Rating.
 - 2. Wall hung with bracket.

2.03 ACCESSORIES

- A. Extinguisher Brackets: Formed steel, chrome-plated.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

END OF SECTION

**SECTION 10 7500
FLAGPOLE**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 1 – General Requirements Specification Sections, apply to the Work of this Section.
- B. Provide all labor, materials, equipment and services to furnish and install aluminum flagpoles and finial supported flag down lighting as shown on the drawings or specified herein.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete base and foundation construction.
- B. Division 26 - Electrical
- C. Section 31 2220 - Site Excavation and Backfill
- D. Flag is owner provided

1.03 REFERENCE STANDARDS

- A. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2020.
- B. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2013.
- C. ASTM B241/B241M - Standard Specification for Aluminum and Aluminum-Alloy Seamless Pipe and Seamless Extruded Tube 2016.
- D. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. Product Data: Provide data on pole, accessories, and configurations.
- B. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.

1.05 QUALITY ASSURANCE

- A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.
- B. Structural Performance:
 - 1. Provide flagpole assemblies, including anchorages and supports, capable of withstanding the effects of wind loads, determined according to NAAMM FP 1001 for specified ground speed.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Spiral wrap flagpole with protective covering and pack in protective shipping tubes or containers.
- B. Protect flagpole and accessories from damage or moisture.
- C. Keep flagpole and accessories covered and dry to prevent soiling or damage.
- D. Handle with protective gloves to prevent unwanted distortion.

1.07 WARRANTY

- A. This Contractor shall furnish a written guarantee for the flagpole, including all fittings and all work performed, for a period of one (1) year from the date of Substantial Completion. The Form of Guarantee is included in Section 01 7836 - Form of Guarantee

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Flagpoles:
 - 1. American Flagpole: www.americanflagpole.com.
 - 2. Eder Flagpole Co.: www.ederflagnews.com
 - 3. Morgan-Francis Flagpoles: www.morgan-francis.com
 - 4. Pole-Tech Co., Inc: www.polettech.com.
 - 5. The Flagpole Warehouse: www.flagpolewarehouse.com

2.02 FLAGPOLES

- A. Basis of Design: Flagpole Warehouse, Illuminator Architectural Series IL35
- B. General
 - 1. The Flagpole Warehouse, Illuminator Architectural Series IL35, is specified herein and considered the Basis of Design.
- C. Pole: 35'-0" high (exposed) aluminum cone tapered seamless shaft spun from 6063 T6 tubing, uniformly tapered 1" in every 5'6" above the straight portion of the pole. Wall thickness shall be 0.188". Butt shall be 7" in diameter. Design to withstand 90 MPH wind load (constant) and 120 MPH wind load with gust factor.
- D. Finish: Clear Anodized Finish: Architectural Class I integrally colored or electrolytically deposited color coating.
 - 1. Illuminator finial: Finish to match pole
- E. Fittings
 - 1. External Halyard: Manually operated halyard. Provide ball-bearing, non-fouling, revolving truck assembly. Finish exposed metal surfaces to match flagpole.
 - a. Exposed Height. 35ft
 - b. Overall Length. 38.5ft
 - c. Diameter. 7" base and 3.5" top
 - d. Wall Thickness. 188"
 - e. Wind speed. 120mph flagged
 - f. Mounting Device. Ground sleeve
 - 2. Flagpole Light: Down-Lit Design; allows the flag to be illuminated with a one-piece flagpole finial and light combination.
 - a. Low voltage LED Lights. 110 Volts
 - b. Revolves full 359 degrees.
 - c. External Halyard
 - d. Provide fifty (50) feet electrical wire. 18/3
 - 3. Halyard: Shall be No.10, (5/16") white waterproof polypropylene, equipped with four (4) chrome swivel snaps each to secure the flags with locking cover.
 - 4. Cleat
 - a. Provide one (1) 9" cast aluminum cleat with "clear anodized" finish to match the shaft.
 - b. Mount with tamper proof stainless steel socket head bolts.
 - c. Provide locking cover for cleat.
 - 5. Collar
 - a. The flash collar, or ornamental base, shall be cast aluminum.
 - b. The diameter of the collar shall be at least 1" larger than the diameter of the foundation sleeve.
 - c. The finish shall be "clear anodized" to match the shaft.
 - 6. Foundation Sleeve
 - a. Shall be fabricated from No.16 ga. galvanized steel.
 - b. A steel base plate with the square dimension at least twice the butt diameter of the shaft shall be provided.
 - c. The thickness of the base plate shall be 1/2".

- d. A setting plate of the same thickness as the base plate shall be provided in a size that is half the size of the base plate.
- e. The setting plate shall be securely welded to the ground spike at least 4" below the base plate.
- f. The ground spike shall be 3/4" diameter, not less than 18" long.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that concrete foundation is ready to receive work and dimensions are as indicated on shop drawings.
- B. Verify that electric power is available and of the correct characteristics.

3.02 PREPARATION

- A. Coat metal sleeve surfaces below grade and surfaces in contact with dissimilar materials with asphaltic paint.

3.03 INSTALLATION

- A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.
- B. Install flagpoles where shown on drawings and in accordance with manufacturer's written instructions. Poles shall be erected plumb.
- C. Install down-lit design lighting fixture on top of flagpoles; coordinate installation with Division 26 Contractor.

END OF SECTION

**SECTION 12 3640
GRANITE COUNTERTOPS**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Granite Countertops for architectural cabinet work.

1.02 RELATED REQUIREMENTS

- A. Section 06 4000 - Prefinished Cabinets and Trim

1.03 REFERENCE STANDARDS

- A. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2017.
- B. MIA (DSDM) - Dimensional Stone Design Manual, Version VIII 2016.

1.04 SUBMITTALS

- A. 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.
- B. Shop Drawings: Complete details of materials and installation ; combine with shop drawings of cabinets and casework specified in other sections.
- C. Selection Samples: For each finish product specified, color chips representing manufacturer's full range of available colors and patterns.
- D. Maintenance Data: Manufacturer's instructions and recommendations for maintenance and repair of countertop surfaces.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing work of the type specified in this section, with not less than three years of documented experience.

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 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.

PART 2 PRODUCTS

2.01 COUNTERTOPS

- A. Quality Standard: See Section 06 4000.
- B. Natural Stone Countertops: Stone slabs bonded to substrate; use as large pieces as possible with inconspicuous adhesive joints.
 - 1. Stone: Granite without cracks, voids, or pin holes ; filling with matching epoxy resin is acceptable.
 - 2. Color: As selected by Architect.
 - 3. Stone Thickness: 1/2 inch (12 mm), minimum.
 - 4. Surface Finish: Honed, non-glare.
 - 5. Exposed Edge Treatment: Stone bullnose, 1 inch (25 mm) radius.
 - 6. Back and End Splashes: Same material, same thickness; for field attachment.
 - 7. Fabricate in accordance with manufacturer's standard requirements.

2.02 MATERIALS

- A. Adhesives: Chemical resistant waterproof adhesive as recommended by manufacturer of materials being joined.

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. Fabricate to overhang fronts and ends of cabinets 1 inch (25 mm) except where top butts against cabinet or wall.
 - 3. 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 (102 mm), unless otherwise indicated.

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. Seal joint between back/end splashes and vertical surfaces.

3.04 TOLERANCES

- A. Variation From Horizontal: 1/8 inch in 10 feet (3 mm in 3 m), maximum.
- B. Offset From Wall, Countertops: 1/8 inch (3 mm) maximum; 1/16 inch (1.5 mm) minimum.
- C. Field Joints: 1/8 inch (3 mm) wide, maximum.

3.05 CLEANING

- A. Clean countertops surfaces thoroughly.

3.06 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 31 11 00 CLEARING AND GRUBBING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removing surface debris.
 - 2. Removing trees, shrubs, and other plant life.
 - 3. Removing stumps, roots and other buried materials.
 - 4. Disposal of materials.
- B. Related Requirements:
 - 1. Section 02 41 13 – Selective Site Demolition.
 - 2. Section 31 23 13 – Subgrade Preparation.
 - 3. Section 31 23 16 – Excavation.
 - 4. Section 31 23 23 – Fill.

1.2 DEFINITIONS

- A. Clearing: Removal and disposal of logs, limbs, sticks, vegetation, rubbish, debris, and other material on ground surface. Vegetation includes grass, weeds, vines, bushes, shrubs, trees and other plant material.
- B. Grubbing: Removal and disposal of stumps, roots, buried logs, debris, and other underground material 2 feet below natural ground.

1.3 QUALITY ASSURANCE

- A. Conform to local, state and federal laws for disposal of materials.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing plant life indicated on Drawings to remain.

3.2 PREPARATION

- A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain.

3.3 CLEARING AND GRUBBING

- A. Clear and grub areas required for access to site and execution of Work.
- B. Remove stumps and root system to depth of 24 inches.
- C. Backfill holes, cuts, and depressions resulting from clearing and grubbing. Compact to density of surrounding ground.

3.4 DISPOSAL

- A. Remove clearing and grubbing materials from site.
- B. Continuously clean-up and remove waste materials from Site. Do not allow materials to accumulate on Site.
- C. Do not burn or bury materials on Site. Leave Site in clean condition.

3.5 PROTECTION

- A. Protect existing plant life, utilities and improvements indicated to remain from damage.
- B. Protect benchmarks and survey control points from damage or displacement.

END OF SECTION

SECTION 31 22 10
SITE GRADING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavation and fill for site improvements.
 - 2. Excavating soft spots and rock.
 - 3. Dewatering.
 - 4. Disposal of unsuitable and excess excavated materials.
 - 5. Subgrade preparation.
 - 6. Finish grading and placement of topsoil.
- B. Related Requirements:
 - 1. Section 01 50 00 - Temporary Facilities and Controls.
 - 2. Section 02 41 13 – Selective Site Demolition.
 - 3. Section 31 11 00 – Clearing and Grubbing.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 - 2. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
 - 3. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International (ASTM):
 - 1. **[ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).]**
 - 2. **[ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).]**
 - 3. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 4. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- A. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.
- B. Excavation Classification: Will be based on soil type and equipment required.
 - 1. Excavation: Excavation of unclassified soils. Use minimum of D8 bulldozer, 330 trackhoe with ripper shank, or equal equipment. Contractor may elect to use larger equipment, but electing to use larger equipment will not change classification of excavation.
 - 2. Rock Excavation: Excavation of solid rock which requires using excavator with rock hammer or use of explosives, and cannot be removed with minimum equipment required for unclassified soils noted above.
 - 3. Soft Spot Excavation: Excavation of soft spots below subgrade and backfilling with granular borrow to subgrade elevation. Use of geotextile and geogrid will be determined by Engineer.
- C. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve.
- D. Soil Classification: ASTM D2487 and AASHTO M145.
- E. Topsoil: Top 6 inches of existing onsite soil.

1.4 SUBMITTALS

- A. Test Results: Submit proctor and density test results on same day testing is completed.

1.5 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slopes.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Imported Fill: A-1a through A-4 soils as classified in accordance with AASHTO M145.
- B. Topsoil: Use top 6 inches of existing onsite soil.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify survey bench mark and intended elevations for Work are as indicated on Drawings.

3.2 PREPARATION

- A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Where indicated, notify utility company to remove or relocate utilities.
- C. Identify required lines, grades, elevations and datum.
- D. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.

3.3 TOPSOIL EXCAVATION

- A. Excavate existing on-site soils to depth of 6 inches to remove topsoil from areas to be further excavated, re-landscaped, or regraded, without mixing with foreign materials for use in finish grading.
- B. Do not excavate excessively wet topsoil.
- C. Stockpile topsoil on site and protect from erosion.
- D. Remove excess topsoil not intended for reuse, from Site.

3.4 SOIL EXCAVATION

- A. Excavate soil as required to construct improvements, provide drainage, accommodate construction operations, and as indicated on Drawings.
- B. Do not excavate excessively wet soil.
- C. When excavating through roots of trees which are to remain, perform Work by hand and cut roots with sharp axe.
- D. Slope banks to angle of repose or less until shored. Provide shoring as needed.
- E. Do not interfere with 45 degree bearing splay of foundations.
- F. Remove lumped soil, boulders, rock and unsuitable soils from site.
- G. Trim excavation to required elevation. Remove loose materials.
- H. Stockpile soil on site and protect from erosion.

- I. Horizontally bench existing slopes greater than 4:1 (horizontal to vertical) to key placed fill material to slope to provide firm bearing.

3.5 SOFT SPOT EXCAVATION

- A. If soft areas appear, scarify, aerate and re-compact. If soft areas persist, notify Engineer. Coordinate soft spot excavation with Engineer.
- B. If soft areas are due to neglect by Contractor, correct soft areas with no additional compensation by Owner.
- C. Engineer will determine depth and area to be excavated for soft spot repairs. Excavate unsuitable soil and dispose offsite.
- D. Engineer will determine whether or not geotextile and geogrid will be used for soft spot repairs.
- E. Backfill soft spot excavation with granular borrow in accordance with Section 32 11 16, unless indicated otherwise on Drawings or indicated otherwise by Engineer.

3.6 OVER EXCAVATION

- A. Where indicated on Drawings, over excavate to depth indicated or to suitable subgrade soil.

3.7 ROCK EXCAVATION

- A. **[Rock excavation is not anticipated.]**
- B. Rock excavation is anticipated.
- C. Excavate rock with suitable equipment and method selected by Contractor such as rock saw, rock tooth ripper, drilling and blasting.
- D. If blasting is used to excavate rock, exercise necessary precautions required for handling explosives and conducting blasting. Prevent rock fragments from flying offsite. Conduct blasting during daylight hours. Use qualified personnel and comply with local, state and federal laws.
- E. If blasting is used to excavate rock, notify Owner, Engineer and anyone that might be affected by blasting operations 48 hours prior to blasting.
- F. Remove and dispose of rock offsite, unless indicated otherwise.
- G. Remove loose rocks and fragments. Leave remaining rock in safe condition.

3.8 DEWATERING

- A. Keep excavation free from surface and ground water.
- B. Maintain adequate drainage through pumping, pipe culverts, drainage ditches, and other methods.
- C. Provide temporary facilities when interrupting utilities, irrigation, drainage and other systems.
- D. Grade perimeter of excavation to prevent surface water from draining into excavation.

3.9 FILL

- A. Use suitable excavated soil for fill. Do not use frozen materials, organic materials, rubbish, debris, or other objectionable materials.
- B. If fill height is 6 feet or less and underlying soil consists of loose material, scarify and compact top 8 inches of underlying soil to at least 90 percent of maximum laboratory density prior to placing fill.
- C. Do not place fill over porous, wet, frozen, or spongy surfaces.
- D. Unless indicated otherwise, uniformly spread fill in layers not exceeding 12 inches non-compacted depth. If tests indicate unsatisfactory density, reduce layer thickness.
- E. Compact each layer to density indicated in Compaction Schedule at end of this Section.
- F. Maintain optimum moisture content of fill materials.
- G. Mix rocks with finer materials to minimize voids. Do not place rocks exceeding 2 inches within 12 inches of pavement subgrade and within 2 feet of structures.
- H. Grade to blend in with existing contours and provide positive drainage. Place fill to contours and elevations indicated on Drawings.
- I. Remove surplus soil from site.

3.10 FINISHING

- A. Finish excavated and fill areas to reasonably smooth and uniform surface.
- B. After excavating to subgrade elevation, scarify and recompact top 8 inches of subgrade prior to placing subbase and base course.

- C. Maintain optimum moisture content of subgrade material. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.
- D. After improvements have been constructed, grade shoulders to blend in with existing contours and improvements.
- E. Place stockpiled topsoil in top 6 inches of fill for landscape areas. Remove rocks larger than $\frac{3}{4}$ inch, rubbish, debris, or other objectionable materials from topsoil. Spread stockpiled topsoil evenly over finish grade of fill slopes.

3.11 TOLERANCES

- A. Moisture Content: Plus or minus 2 percent of optimum. Test in accordance with ASTM D6938.
- B. Finish Subgrade Surface: Plus or minus 0.04 feet of required elevation.
- C. Finish Grade of Fill Surface: Plus or minus 0.1 feet of required elevation.

3.12 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determined in accordance with ASTM D1557 for course grained soils and ASTM D698 for fine grained soils. Test for each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of the Section.
- C. Density Tests: Perform in accordance with ASTM D6938.
 - 1. Frequency:
 - a. Fill: Take minimum of two tests for each 1,500 square yards per each layer.
 - b. Subgrade: Take minimum of two tests for each 1,500 square yards.
 - 2. Acceptance: Equals or exceeds density indicated in Compaction Schedule at end of this Section.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.13 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with ASTM D1557 for course grained soils and ASTM D698 for fine grained soils. Test for each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of this Section.

- C. Density Tests: Engineer will perform in accordance with ASTM D6938.
 - 1. Frequency of Tests:
 - a. Fill: Take minimum of 2 tests for each 1,500 square yards per each layer. Random tests.
 - b. Subgrade: Take minimum of two tests for each 1,500 square yards. Random tests.
 - 2. Acceptance: Equals or exceeds density indicated in Compaction Schedule at end of this Section.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary remove and replace Work.

3.14 PROTECTION

- A. Protect existing utilities and improvements indicated to remain, from damage.
- B. Protect plant life, lawns, and other features remaining as part of final landscaping.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- D. Protect benchmarks and survey control point from damage or displacement.
- E. Repair or replace items damaged by grading operations.

3.15 COMPACTION SCHEDULE

- A. Fill for Non-traveled Areas: Compact to minimum 90 percent of maximum laboratory density. Includes landscape areas.
- B. Fill for Traveled Areas and Structures: Compact to minimum 96 percent of maximum laboratory density. Includes roads, parking lots, concrete flatwork, driveways and structures.
- C. Subgrade: Compact to minimum 95 percent of maximum laboratory density.

END OF SECTION

SECTION 31 23 13 SUBGRADE PREPARATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Grading, scarifying, watering and compacting for subgrade preparation.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 31 11 00 – Clearing and Grubbing.
 - 3. Section 31 23 16 – Excavation.
 - 4. Section 31 23 23 – Fill.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 - 2. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
 - 3. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International (ASTM):
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
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 - 3. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)
 - 4. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- A. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.

- B. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve
- C. Soil Classification: In accordance with ASTM D2487 and AASHTO M145.

PART 2 PRODUCTS – Not Used

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify subgrade is ready for final grading and compacting.

3.2 PREPARATION

- A. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements.
- B. Excavate soil to subgrade elevation in accordance with Section 31 23 16.
- C. Place excavated soil in fill sections in accordance with Section 31 23 23.

3.3 SUBGRADE PREPARATION

- A. After excavating to subgrade elevation, scarify and re-compact top 8-inches of subgrade soil prior to placing subbase and base course materials.
- B. Compact subgrade to minimum 95 percent of maximum laboratory density.
- C. Maintain optimum moisture content of subgrade soil. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.
- D. Proof roll subgrade and notify Engineer of any soft spots.

3.4 FINISHING

- A. Finish subgrade to reasonably smooth and uniform surface.

3.5 TOLERANCES

- A. Finish Subgrade Surface: Plus or minus 0.04-foot from required grade and plus or minus 0.1-foot from required line.
- B. Subgrade Moisture Content: Plus or minus 2 percent of optimum. Test in accordance with ASTM D6938.

3.6 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determine in accordance with ASTM D1557 for course grained soils and ASTM D698 for fine grained soils. Test each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated.
- C. Density Tests: Perform in accordance with ASTM D6938.
 - 1. Frequency: Take minimum of two tests for each 1,500 square yards.
 - 2. Acceptance: Equals or exceeds density indicated in this Section.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.7 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with ASTM D1557 for course grained soils and ASTM D698 for fine grained soils. Engineer will test each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated.
- C. Density Tests: Engineer will perform in accordance with ASTM D6938.
 - 1. Frequency: Take minimum of two tests for each 1,500 square yards of subgrade. Random tests.
 - 2. Acceptance: Equals or exceeds density indicated in this Section.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.8 PROTECTION

- A. Protect existing utilities and improvements indicated to remain, from damage.
- B. Repair or replace items damaged by operations.
- C. Maintain subgrade until next layer is placed.

END OF SECTION

SECTION 31 23 16
EXCAVATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating topsoil and soil.
 - 2. Excavating soft spots and rock.
 - 3. Over excavation.
 - 4. Dewatering.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 02 41 13 – Selective Site Demolition.
 - 3. Section 31 11 00 – Clearing and Grubbing.
 - 4. Section 31 23 13 – Subgrade Preparation.
 - 5. Section 31 23 23 – Fill.
 - 6. Section 32 11 16 – Subbase Courses.
 - 7. Section 32 11 23 – Aggregate Base Courses.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
- B. ASTM International (ASTM):
 - 1. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).

1.3 DEFINITIONS

- A. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.
- B. Excavation Classification: Will be based on soil type and equipment required.
 - 1. Excavation: Excavation of unclassified soils. Use minimum of D8 bulldozer, 330 trackhoe with ripper shank, or equal equipment. Contractor may elect to use larger equipment, but electing to use larger equipment will not change classification of excavation.
 - 2. Rock Excavation: Excavation of solid rock which requires using excavator with rock hammer or use of explosives, and cannot be

removed with minimum equipment required for unclassified soils noted above.

- C. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve.
- D. Soil Classification: ASTM D2487 and AASHTO M145.
- E. Subgrade Soft Spot Repair: Excavation of soft spots below subgrade and backfilling with granular borrow to subgrade elevation. Use of geotextile and geogrid will be determined by Engineer.
- F. Topsoil: Top 6 inches of existing onsite soil.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slopes.

1.5 QUALITY ASSURANCE

- A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Structural Fill: Untreated base course in accordance with Section 32 11 23.
- B. Granular Borrow: In accordance with Section 32 11 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify survey benchmark and intended elevations for Work are as indicated on Drawings.

3.2 PREPARATION

- A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Where indicated, notify utility company to remove or relocate utilities.
- C. Identify required lines, levels, contours, and datum.

- D. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.

3.3 TOPSOIL EXCAVATION

- A. Excavate existing on-site soils to depth of 6 inches to remove topsoil from areas to be further excavated, re-landscaped, or regraded, without mixing with foreign materials for use in finish grading.
- B. Do not excavate excessively wet topsoil.
- C. Stockpile topsoil on site and protect from erosion.
- D. Remove excess topsoil not intended for reuse, from Site.

3.4 SOIL EXCAVATION

- A. Excavate soil as required to construct improvements, provide drainage, accommodate construction operations, and as indicated on Drawings.
- B. Do not excavate excessively wet soil.
- C. When excavating through roots of trees which are to remain, perform Work by hand and cut roots with sharp axe.
- D. Slope banks to angle of repose or less until shored. Provide shoring as needed.
- E. Do not interfere with 45 degree bearing splay of foundations.
- F. Correct areas over excavated with structural fill in accordance with Section 32 11 23.
- G. Compact disturbed load bearing soil in direct contact with footings to original density.
- H. Remove lumped soil, boulders, rock and unsuitable soils from site.
- I. Trim excavation to required elevation. Remove loose materials.
- J. Stockpile soil on site and protect from erosion.
- K. Horizontally bench existing slopes greater than 4:1 (horizontal to vertical) to key placed fill material to slope to provide firm bearing.

3.5 SOFT SPOT EXCAVATION

- A. If soft areas appear, scarify, aerate and re-compact. If soft areas persist, notify Engineer. Coordinate soft spot excavation with Engineer.
- B. If soft areas are due to neglect by Contractor, correct soft areas with no additional compensation by Owner.
- C. Engineer will determine depth and area to be excavated for soft spot repairs. Excavate unsuitable soil and dispose offsite.
- D. Engineer will determine whether or not geotextile and geogrid will be used for soft spot repairs.
- E. Backfill soft spot excavation with granular borrow in accordance with Section 31 23 23, unless indicated otherwise on Drawings or indicated otherwise by Engineer.

3.6 OVER EXCAVATION

- A. Where indicated on Drawings, over excavate to depth indicated or to suitable subgrade soil.

3.7 ROCK EXCAVATION

- A. Rock excavation is anticipated.
- B. Excavate rock with suitable equipment and method selected by Contractor such as rock saw, rock tooth ripper, drilling and blasting.
- C. If blasting is used to excavate rock, exercise necessary precautions required for handling explosives and conducting blasting. Prevent rock fragments from flying offsite. Conduct blasting during daylight hours. Use qualified personnel and comply with local, state and federal laws.
- D. If blasting is used to excavate rock, notify Owner, Engineer and anyone that might be affected by blasting operations 48 hours prior to blasting.
- E. Remove and dispose of rock in fill sections or offsite, unless indicated otherwise.
- F. Remove loose rocks and fragments. Leave remaining rock in safe condition.

3.8 DEWATERING

- A. Keep excavation free from surface and ground water. Keep excavation free of standing water.

- B. Maintain adequate drainage through pumping, pipe culverts, drainage ditches, and other methods.
- C. Provide temporary facilities when interrupting utilities, irrigation, drainage and other systems.
- D. Grade perimeter of excavation to prevent surface water from draining into excavation.

3.9 FINISHING

- A. Finish excavation area to reasonably smooth and uniform surface.

3.10 TOLERANCES

- A. Top Surface of General Excavated Areas: Plus or minus 0.1 foot from required elevation.
- B. Top Surface of Subgrade: Plus or minus 0.04 foot from required elevation.

3.11 FIELD ACCEPTANCE TESTING

- A. For structures, request visual inspection of bearing surfaces by Engineer before installing subsequent work.

3.12 PROTECTION

- A. Protect existing utilities and improvements indicated to remain, from damage.
- B. Protect plant life, lawns, and other features remaining as part of final landscaping.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- D. Protect benchmarks and survey control point from damage or displacement.
- E. Repair or replace items damaged by earthwork operations.
- F. Maintain subgrade until next layer is placed.

END OF SECTION

SECTION 31 23 16.13 TRENCHING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavating trenches for utilities and utility structures.
 - 2. Backfill and compaction for utility trenches.
 - 3. Rock excavation for trenches.
- B. Related Requirements:
 - 1. Section 01 50 00 - Temporary Facilities and Controls.
 - 2. Section 02 32 19 – Exploratory Excavations.
 - 3. Section 31 05 16 – Aggregates for Earthwork.
 - 4. Section 33 14 15 – Site Water Utility.
 - 5. Section 33 31 15 – Site Sanitary Sewerage Utility.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M145 - Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 - 2. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
 - 3. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International (ASTM):
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
 - 2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
 - 3. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 4. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).
- C. Occupational Safety and Health Administration (OSHA).

1.3 DEFINITIONS

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- A. Backfill: Material placed after utilities and bedding.
- B. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.
- C. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve.
- D. Soil Classification: ASTM D2487 and AASHTO M145.
- E. Trench Excavation Classification: Will be based on soil type and equipment required.
 - 1. Trench Excavation: Excavation of unclassified soils. Use minimum of 330 trackhoe with ripper shank or equal equipment. Contractor may elect to use larger equipment, but electing to use larger equipment will not change classification of excavation.
 - 2. Rock Trench Excavation: Excavation of solid rock which requires using excavator with rock hammer or use of explosives, and cannot be removed with minimum equipment required for unclassified soils noted above.
- F. Utility: Any buried pipe, duct, conduit, cable and appurtenance.

1.4 SUBMITTALS

- A. Test Results: Submit proctor and density quality control test results within 24 hours after testing is completed.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Backfill: Excavated material free from rubbish, debris, organic material, frozen material, or other objectionable material.
 - 1. Rocks originating from trench and not exceeding 12 inches.
 - 2. Broken Portland cement concrete and asphalt concrete pavement originating from trench and not exceeding 6 inches.
 - 3. If excavated material is not suitable for backfill, import granular material.
- B. Coarse Aggregate Type A3: In accordance with Section 31 05 16.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify field measurements and existing utilities being crossed prior to Work.

- B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

3.2 PREPARATION

- A. Call Blue Stakes at 811 not less than two working days before performing Work. Request underground utilities to be located and marked within and surrounding construction areas.
- B. Make exploratory excavations as necessary to locate existing utilities to avoid utility conflicts and make utility connections. Make exploratory excavations in accordance with Section 02 32 19.
- C. Identify required location and elevation of new utility lines and buried structures.
- D. Notify Engineer immediately after utility conflicts are identified.
- E. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain in accordance with Section 01 50 00.
- F. When working on shoulders or within roadway, use traffic regulation measures in accordance with Section 01 50 00 to direct traffic through work zone.
- G. Install appropriate erosion and sediment control measures prior to starting trenching.
- H. Clear vegetation, debris, and rubbish from utility alignment. Dispose of material off site.
- I. When service lines cross paved roads, install service line by jacking, moleing, or augering under pavement.
- J. When trench is in sodded areas, carefully remove sod and stockpile for placement after backfill is placed.
- K. When trench is in cultivated areas, remove 12 inches of topsoil and stockpile for placement as final layer of backfill.

3.3 EXCAVATION

- A. Excavate soil required for installation of utility lines and appurtenances.
- B. Cut trenches sufficiently wide to enable installation of pipe and appurtenances, and allow inspection. Cut slope of trench walls to meet Utah State Industrial Commission and OSHA requirements, and soil

conditions. Provide shoring where needed. Take necessary precautions to protect employees in or around excavations.

- C. Remove water from trench. Maintain trenches free from water. Dewatering of trench will be considered incidental to trenching and shall be included in bid price.
- D. Hand trim excavation for bell and spigot pipe joints and to required elevation for buried structures. Remove materials that interfere with Work.
- E. Remove lumped soil, boulders, and rock.
- F. Correct areas over excavated and re-compact.
- G. Stockpile excavated material alongside of trench or in other areas to minimize damage to improvements.
- H. No more than 500 linear feet of open trench permitted. At end of each work day, bring backfill operation concurrent with excavation operation.
- I. For pipe, minimum width of trench shall not be less than outside diameter of pipe plus 12 inches on each side of pipe.
- J. Excavate trenches to depth indicated on Drawings. Provide uniform and continuous bearing and support for bedding material and utilities.
- K. Cut out soft areas of subgrade not capable of compaction in place. Backfill with coarse grained soil, and compact to density equal to or greater than requirements for subsequent backfill material.

3.4 ROCK EXCAVATION

- A. Rock excavation is anticipated.
- B. Excavate rock with suitable equipment and method selected by Contractor such as rock saw, rock tooth ripper, drilling and blasting.
- C. If blasting is used to excavate rock, exercise necessary precautions required for handling explosives and conducting blasting. Prevent rock fragments from flying offsite. Conduct blasting during daylight hours. Use qualified personnel and comply with local, state and federal laws.
- D. In rock excavation area, excavate trench 6 inches below bottom of pipe for placement of bedding material 6 inches below pipe.
- E. Remove loose rocks and fragments. Remove and dispose of rock offsite, unless indicated otherwise.

3.5 LINES AND GRADES

- A. Lay pipes to lines and grades indicated on Drawings.
- B. Use laser-beam instrument with qualified operator to establish lines and grades.
- C. Engineer may make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

3.6 SHEETING AND SHORING

- A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil. Meet OSHA requirements.
- B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.
- C. Design sheeting and shoring to be removed at completion of trenching work.
- D. Repair damage caused by failure of sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.
- E. Repair damage to new and existing work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.7 BACKFILL

- A. After utilities, appurtenances, and bedding have been installed; backfill trenches. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- B. Employ placement method that does not disturb or damage utilities and other improvements.
- C. Backfill in layers not exceeding 12 inches non-compacted depth. Reduce layer thickness if tests show unsatisfactory density. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment. When using hand-operated compaction equipment, backfill in layers not exceeding 6 inches no-compacted depth.
- D. Mix rocks with finer material to minimize voids. Do not place rocks exceeding 2 inches within 12 inches of pavement subgrade and within 2 feet of structures.

- E. When trench is in cultivated areas, place stockpiled topsoil in final layer of backfill. Remove rocks exceeding 1.5 inches from topsoil.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Compact backfill to density indicated in Compaction Schedule at end of this Section.
- H. Grade surplus material to blend in with existing contours or remove surplus materials from site if necessary. Do not leave rocks originating from trench and exceeding 2 inches on finish grade.
- I. Slope surface grade away from buried structures.
- J. Restore damaged surface improvements including, but not limited to: fences, ditches, culverts, signs, delineators, curbs, sidewalks, structures, landscaping, and other miscellaneous items. Restore improvements to equal or better condition as existed prior to construction.
- K. Make roadway repairs or construct temporary gravel surface immediately after backfill is placed. Maintain gravel surface until final surface is placed.

3.8 TOLERANCES

- A. Top Surface of General Backfill: Plus or minus 0.1 foot from required elevations.
- B. Top Surface of Backfill under Paved Areas: Plus or minus 0.04 foot from required subgrade elevation.
- C. Moisture Content: Plus or minus 2 percent of optimum. Test in accordance with ASTM D6938.

3.9 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determined in accordance with ASTM D1557 for coarse grained soils and ASTM D698 for fine grained soils. Test for each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of this Section.
- C. Density Tests: Perform in accordance with ASTM D6938.
 - 1. Frequency: Take minimum of one density test per lift for each 500 linear feet of trench and take minimum of one density test per lift for each road crossing.

2. Acceptance: Average density equals or exceeds density indicated in Compaction Schedule at end of this Section. Reject single density tests greater than 4 percent below specified density.
3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.10 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with ASTM D1557 for coarse grained soils and ASTM D698 for fine grained soils. Engineer will test each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of this Section.
- C. Density Tests: Engineer will perform in accordance with ASTM D6938.
 1. Frequency: Take minimum of one density test per lift for each 500 linear feet of trench and take minimum of one density test per lift for each road crossing. Random density tests with minimum of one density test for each 500 linear feet of trench and one test for each road crossing.
 2. Acceptance: Average density equals or exceeds density indicated in Compaction Schedule at end of this Section. Reject single density tests greater than 4 percent below specified density.
 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.11 PROTECTION OF FINISHED WORK

- A. Protect utilities indicated to remain from damage.
- B. Protect existing improvements to remain from damage.
- C. Protect benchmarks and survey control point from damage or displacement.
- D. Protect finished Work from damage.
- E. Reshape and re-compact trenches subjected to vehicular traffic during construction. Add and compact additional material to trenches which settle 0.75 inch or greater.

3.12 COMPACTION SCHEDULE

- A. Non Traveled Areas: Compact backfill to minimum 90 percent of maximum laboratory density. Includes trenches in landscape areas and unimproved areas.

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- B. Traveled Areas and Structures: Compact backfill to minimum 96 percent of maximum laboratory density. Includes trenches below structures, sidewalks, roads, parking lots, driveways and roadway shoulders within 10 feet of pavement edge.

END OF SECTION

SECTION 31 23 23
FILL

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Placing fill for site improvements.
 - 2. Placing backfill for structures.
 - 3. Placing granular backfill borrow.
 - 4. Placing structural fill.
 - 5. Placing excavated topsoil.
 - 6. Finish grading.
- B. Related Requirements:
 - 1. Section 02 41 13 – Selective Site Demolition.
 - 2. Section 31 11 00 – Clearing and Grubbing.
 - 3. Section 31 23 16 – Excavation.
 - 4. Section 32 11 23 – Aggregate Base Courses.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 - 2. AASHTO T99 - Standard Method of Test for Moisture-Density Relations of Soils Using a 2.5-kg (5.5-lb) Rammer and a 305-mm (12-in.) Drop.
 - 3. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International (ASTM):
 - 1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³ (600 kN-m/m³).
 - 2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
 - 3. ASTM D2487 - Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 4. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- A. Backfill: Soil placed around structures to indicated finish grade.
- B. Coarse Grained Soil: Soils with more than 50 percent retained on No. 200 sieve.
- C. Fill: Soil placed on site to indicated finish grade.
- D. Fine Grained Soil: Soils with 50 percent or more passing No. 200 sieve.
- E. Soil Classification: In accordance with ASTM D2487 and AASHTO M145.
- F. Topsoil: Top 6 inches of existing onsite soil.

1.4 SUBMITTALS

- A. Test Results: Submit proctor and density quality control test results within 24 hours after testing is completed.

1.5 QUALITY ASSURANCE

- A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Topsoil: Top 6 inches of existing onsite soil.
- B. Fill and Backfill: Use existing onsite excavated soil free from rubbish, debris, organic material, frozen material, or other objectionable materials.
- C. Imported Fill: A-1a through A-4 soils as classified in accordance with AASHTO M145.
- D. Granular Backfill Borrow: Non-plastic, well graded, 2 inch maximum size, A-1a soil as classified in accordance with AASHTO M145.
- E. Structural Fill: Untreated base course in accordance with Section 32 11 23.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify survey benchmark and intended elevations for Work are as indicated on Drawings.

- B. Verify sub-drainage, damp proofing and waterproofing are complete prior to backfilling for site structures.
- C. Verify structural ability of unsupported walls to support loads imposed by backfill.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Erect and maintain temporary barriers, safety devices and similar measures for protection of public and existing improvements to remain.
- C. Maintain dewatering until final fill and backfill materials are in place.

3.3 CONSTRUCTION – GENERAL

- A. If excavated material is not sufficient for required fill and backfill, use imported fill material.
- B. Place fill and backfill to contours and elevations indicated on Drawings.
- C. Mix rocks with finer materials to minimize voids.
- D. Unless indicated otherwise, place and compact fill and backfill material in continuous layers not exceeding 12 inches non-compacted depth. If tests indicate unsatisfactory density, reduce layer thickness.
- E. Maintain optimum moisture content of fill and backfill materials to attain required compaction density.
- F. Compact fill and backfill materials to density indicated in Compaction Schedule at end of this Section.
- G. Remove surplus soil from site.

3.4 FILL

- A. If fill height is 6 feet or less and underlying ground consists of loose material, scarify and compact top 8 inches of underlying ground to at least 90 percent of maximum laboratory density prior to placing fill materials.
- B. Do not place rocks exceeding 4 inches within 12 inches of pavement subgrade.
- C. Slope grade as indicated on Drawings.

3.5 BACKFILL

- A. Backfill areas excavated for structures and other improvements. Backfill to contours and elevations indicated with suitable materials.
- B. Employ placement method that does not disturb or damage structure or other work.
- C. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- D. Do not place rocks exceeding 2 inches within 2 feet of structures.
- E. Unless indicated otherwise on Drawings, slope grade away from structures at minimum 5 percent slope for minimum distance of 10 feet.

3.6 GRANULAR BACKFILL BORROW

- A. Where indicated on Drawings, place granular backfill borrow for backfill within two feet of box culverts, bridges and other structures.
- B. Place and compact granular backfill borrow in continuous layers not exceeding 6 inches compacted depth.

3.7 STRUCTURAL FILL

- A. Where indicated on Drawings, place structural fill.
- B. Prior to placing structural fill, scarify and compact top 8 inches of underlying ground to at least 90 percent of maximum laboratory density.
- C. Place and compact structural fill in continuous layers not exceeding 6 inches compacted depth.

3.8 TOPSOIL

- A. Place stockpiled topsoil in top 6 inches of fill for landscape areas.
- B. Remove rocks larger than $\frac{3}{4}$ inch, rubbish, debris, or other objectionable materials.
- C. Spread stockpiled topsoil evenly over finish grade of fill slopes.

3.9 FINISHING

- A. Finish fill and backfill to reasonably smooth and uniform surface.
- B. Make grade changes gradual. Blend slope into level areas.

3.10 TOLERANCES

- A. Top Surface of General Fill and Backfill: Plus or minus 0.1 foot from required elevation.
- B. Top Surface of Subgrade: Plus or minus 0.04 foot from required elevation.
- C. Moisture Content: Plus or minus 2 percent of optimum. Test in accordance with ASTM D6938.

3.11 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determined in accordance with ASTM D1557 for course grained soils and ASTM D698 for fine grained soils. Test for each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of this Section.
- C. Density Tests: Perform in accordance with ASTM D6938.
 - 1. Frequency:
 - a. Fill, Backfill and Structural Fill: Take minimum of two tests for each 1,500 square yards per each layer.
 - b. Granular Backfill Borrow: Take minimum of two tests for each layer on each structure or pipe culvert.
 - 2. Acceptance: Equals or exceeds density indicated in Compaction Schedule at end of this Section.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.12 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with ASTM D1557 for course grained soils and ASTM D698 for fine grained soils. Engineer will test each type of soil encountered on site.
- B. Establish roller patterns necessary to achieve density indicated in Compaction Schedule at end of this Section.
- C. Density Tests: Engineer will perform in accordance with ASTM D6938.
 - 1. Frequency:
 - a. Fill, Backfill and Structural Fill: Take minimum of two tests for each 1,500 square yards per each layer. Random tests.
 - b. Granular Backfill Borrow: Take minimum of two tests for each layer on each structure. Random tests.
 - 2. Acceptance: Equals or exceeds density indicated in Compaction Schedule at end of this Section.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.13 PROTECTION

- A. Protect existing utilities and improvements indicated to remain, from damage.
- B. Protect plant life, lawns, and other features remaining as part of final landscaping.
- C. Protect structures, utilities and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- D. Protect bench marks and survey control point from damage or displacement.
- E. Repair or replace items damaged by excavation or backfilling.

3.14 COMPACTION SCHEDULE

- A. Fill and Backfill for Non-traveled Areas: Compact to minimum 90 percent of maximum laboratory density. Includes landscape areas.
- B. Fill and Backfill for Traveled Areas and Structures: Compact to minimum 96 percent of maximum laboratory density. Includes roads, parking lots, driveways, sidewalks and structures.
- C. Granular Backfill Borrow: Compact to minimum 96 percent of maximum laboratory density.
- D. Structural Fill: Compact to minimum 96 percent of maximum laboratory density.

END OF SECTION

SECTION 32 11 16
SUBBASE COURSES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Granular borrow for subbase course.
 - 2. Granular borrow for backfill and soft spot repairs.
- B. Related Requirements:
 - 1. Section 02 41 13 – Selective Site Demolition.
 - 2. Section 31 23 16 – Excavation.
 - 3. Section 31 23 16 – Fill.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 - 2. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
- B. ASTM International (ASTM):
 - 1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
 - 2. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

- A. Lot: One day's production.
- B. Rocky Material: Material with more than 30-percent retained on ¾-inch sieve.
- C. Soil Classification: AASHTO M145.

1.4 SUBMITTALS

- A. Test Reports:
 - 1. Submit test results indicating granular borrow meets material requirements.

1.5 QUALITY ASSURANCE

- A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Granular Borrow: Natural gravel or crushed rock.
 - 1. Classification: AASHTO M145, A-1-a through A-1-b.
 - 2. Gradation: 6-inches maximum.

PART 3 EXECUTION

3.1 PREPARATION

- A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place granular borrow on soft, muddy, or frozen surfaces.
- C. Do not place granular borrow until subgrade is accepted by Engineer.

3.2 INSTALLATION

- A. Place granular borrow in layers not exceeding 12-inches. If necessary to obtain required compaction, reduce layer thickness.
- B. Place to thickness, elevation, and grades indicated on Drawings.
- C. Compact to density indicated in this Section. Establish roller patterns necessary to achieve required density.
- D. Maintain optimum moisture content. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.
- E. Use hand-operated mechanical tamping equipment in areas inaccessible to self-propelled compaction equipment.

3.3 TOLERANCES

- A. Moisture Content: Plus, or minus 2-percent of optimum. Test in accordance with ASTM D6938.
- B. Total Compacted Thickness: Plus, or minus ½-inch. If thickness exceeds tolerance, remove excess material and re-compact. If thickness is less than tolerance, scarify, add material, and re-compact.

- C. Top Surface of granular borrow: Plus, or minus 0.04-foot from required elevation.

3.4 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determined in accordance with ASTM D1557, excepted as indicated below for rocky material.
- A. Maximum Field Density for Rocky Material: Determine in accordance with requirements as follows:
 1. Use test strip at least 100-feet long and 18-feet wide.
 2. Place first lift of granular borrow at optimum moisture content and make two roller passes. Keep equipment off test strip, except equipment required for compaction.
 3. Select 3 random test locations on test strip. Select test locations at least 30-feet from sources of radiation, 10-feet from large objects such as structures, and 12-inches from unsupported edge.
 4. Take one minute reading at each test location with gauge in direct transmission mode taken at depth of $\frac{1}{2}$ lift thickness. Test in accordance with ASTM D6938.
 5. Record dry density test results, pounds per cubic foot, for each test location.
 6. Check that test results from 3 test locations are within 3-pounds per cubic foot of each other. If test results are not within 3-pounds per cubic foot, one or more test locations may be reading oversize rock or void. Move to new test location for each suspect location and retest. Repeat until satisfactory test results are obtained.
 7. Record average of density and moisture results with number and type of passes, vibratory or static.
 8. Clearly mark test locations, such as with paint; do not paint gauge.
 9. Take subsequent density determinations in same locations and same gauge orientation as first test.
 10. Make two or more roller passes over entire test strip.
 11. Repeat density determinations.
 12. Record density results and total number of passes.
 13. Continue rolling and testing, maintaining moisture content, until density test results decrease or maintain same results, within 1-pound per cubic foot. Perform one more roller pass, in static mode, and take density test determination. Final density test should not show decrease of more than 1.5-pound per cubic foot.
 14. Note, slight decrease in density may be observed before maximum density is achieved. If suspected, examine material and if no fracture of material is visible, continue rolling/density testing process until maximum density is achieved.
 15. Plot average field density on vertical axis with associated number of roller passes on horizontal axis.
 16. Connect plotted points with smooth curve.

17. Highest point of curve is maximum field density. Use maximum field density for subsequent testing.
- B. Density Tests: Perform in accordance with ASTM D6938.
 1. Frequency:
 - a. For small areas such as parking lots and driveways less than 5,000-square yards, take minimum of two tests for each 1,500-square yards per each layer.
 - b. For large areas such as roadways greater than or equal to 5,000-square yards, take minimum of one test for each 5,000-square yards per each layer.
 2. Acceptance: Equals or exceeds 96-percent of maximum laboratory density.
 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.
- C. Density Tests for Rocky Material: Perform in accordance with ASTM D6938.
 1. Frequency: Take minimum of two tests for each 1,500-square yards per each lift.
 2. Acceptance: Equals or exceeds 100-percent of maximum field density.
 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.5 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with ASTM D1557, excepted as indicated below for rocky material.
- B. Maximum Field Density for Rocky Material: Engineer will determine in accordance with requirements as follows:
 1. Use test strip at least 100-feet long and 18-feet wide.
 2. Place first lift of granular borrow at optimum moisture content and make two roller passes. Keep equipment off test strip, except equipment required for compaction.
 3. Select 3 random test locations on test strip. Select test locations at least 30-feet from sources of radiation, 10-feet from large objects such as structures, and 12-inches from unsupported edge.
 4. Take one minute reading at each test location with gauge in direct transmission mode taken at depth of $\frac{1}{2}$ lift thickness. Test in accordance with ASTM D6938.
 5. Record dry density test results, pounds per cubic foot, for each test location.
 6. Check that test results from 3 test locations are within 3-pounds per cubic foot of each other. If test results are not within 3-pounds per cubic foot, one or more test locations may be reading oversize rock

or void. Move to new test location for each suspect location and retest. Repeat until satisfactory test results are obtained.

7. Record average of density and moisture results with number and type of passes, vibratory or static.
8. Clearly mark test locations, such as with paint; do not paint gauge.
9. Take subsequent density determinations in same locations and same gauge orientation as first test.
10. Make two or more roller passes over entire test strip.
11. Repeat density determinations.
12. Record density results and total number of passes.
13. Continue rolling and testing, maintaining moisture content, until density test results decrease or maintain same results, within 1-pound per cubic foot. Perform one more roller pass, in static mode, and take density test determination. Final density test should not show decrease of more than 1.5-pounds per cubic foot.
14. Note, slight decrease in density may be observed before maximum density is achieved. If suspected, examine material and if no fracture of material is visible, continue rolling/density testing process until maximum density is achieved.
15. Plot average field density on vertical axis with associated number of roller passes on horizontal axis.
16. Connect plotted points with smooth curve.
17. Highest point of curve is maximum field density. Use maximum field density for subsequent testing.

C. Density Tests: Engineer will perform in accordance with ASTM D6938, excepted as indicated below for rocky material.

1. Frequency: Random tests.
 - a. For small areas such as parking lots and driveways less than 5,000-square yards, take minimum of two tests for each 1,500-square yards per each layer.
 - b. For large areas such as roadways greater than or equal to 5,000-square yards, take minimum of one test for each 5,000-square yards per each layer.
2. Acceptance: Equals or exceeds 96-percent of maximum laboratory density.
3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

D. Density Tests for Rocky Material: Engineer will perform in accordance with ASTM D6938.

1. Frequency: Take minimum of two tests for each 1,500-square yards per each lift.
2. Acceptance: Equals or exceeds 100-percent of maximum field density.
3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.6 PROTECTION

- A. Maintain adequate drainage.
- B. Maintain granular borrow until next layer is placed.

END OF SECTION

SECTION 32 11 23
AGGREGATE BASE COURSES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Untreated base course for pavements.
 - 2. Untreated base course for structural fill.
 - 3. Untreated base course for concrete site elements.
 - 4. Untreated base course for road repairs.
- B. Related Requirements:
 - 1. Section 31 23 16 – Excavation.
 - 2. Section 31 23 23 – Fill.
 - 3. Section 32 12 16 – Asphalt Paving.
 - 4. Section 32 13 13 – Concrete Paving.
 - 5. Section 32 16 00 – Curbs, Gutters, Sidewalks, and Driveways.

1.2 PRICE REDUCTION

- A. Pay Factor for Gradation: Engineer will calculate for each lot as follows.
 - 1. Calculate mean of deviations for each sieve size.
 - 2. Determine pay factor by using maximum mean of deviations and Table 1 of this Section.
 - 3. If test results for gradation are outside limits of 0.70 pay factor, Engineer may reject material and require removal, or allow material to remain with pay factor of 0.50 provided density requirements are met. Do not place additional lots until deficiencies are addressed and corrected.

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Table 1. Pay Factor for Gradation		
Sieve Size	Mean of Deviations from Job-Mix Gradation	Pay Factor
1/2 inch and larger	0 - 9	1.00
	9.1 - 11.0	0.95
	11.1 - 12.0	0.90
	12.1 - 14.0	0.80
	14.1 - 15.0	0.70
3/8 inch	0 - 9	1.00
	9.1 - 11.0	0.95
	11.1 - 12.0	0.90
	12.1 - 14.0	0.80
	14.1 - 15.0	0.70
No. 4	0 - 7.0	1.00
	7.1 - 8.0	0.95
	8.1 - 9.0	0.90
	9.1 - 10.0	0.80
	10.1 - 10.8	0.70
No. 16	0 - 5.0	1.00
	5.0 - 6.5	0.95
	6.6 - 8.0	0.90
	8.1 - 9.0	0.80
	9.1 - 10	0.70
No. 200	0 - 3.0	1.00
	3.0 - 3.3	0.95
	3.4 - 3.6	0.90
	3.7 - 4.1	0.80
	4.2 - 4.5	0.70

B. Price Adjustment:

1. Engineer will calculate for each lot.

2. Engineer will multiply pay factor times unit price for untreated base course for quantity represented by lot.

1.3 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 1. AASHTO M145 – Standard Specification for Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
 2. AASHTO T11 – Standard Method of Test for Materials Finer Than 75- μ m (No. 200) Sieve in Mineral Aggregates by Washing.
 3. AASHTO T19 – Standard Method of Test for Bulk Density (“Unit Weight”) and Voids in Aggregate.
 4. AASHTO T27 - Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
 5. AASHTO T89 – Standard Method of Test for Determining the Liquid Limit of Soils.
 6. AASHTO T90 - Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
 7. AASHTO T96 - Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 8. AASHTO T180 - Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.
 9. AASHTO T193 – Standard Method of Test for the California Bearing Ratio.
 10. AASHTO T335 – Standard Method of Test for Determining the Percentage of Fracture in Coarse Aggregate.
- B. ASTM International (ASTM):
 1. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³).
 2. ASTM D6938 - Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.4 DEFINITIONS

- A. Lot: One day’s production.
- B. Mean of Deviations: Sum of absolute values of deviations from job-mix gradation divided by number of samples.
- C. Soil Classification: AASHTO M145.

1.5 SUBMITTALS

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- A. Prior to Production:
 - 1. Identify aggregate source.
 - 2. Submit test results indicating aggregate meets material requirements indicated in Table 2 of this Section.
 - 3. Submit job-mix gradation indicating single value for each sieve size within bands shown on Table 3 and Table 4 of this Section.
- B. Changes to Job-Mix Gradation: Submit in writing prior to start of day's production. Changes are subject to approval. Retroactive changes are allowed only for first day's production.

1.6 QUALITY ASSURANCE

- A. Obtain materials from approved commercial pit. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Untreated Base Course:
 - 1. Crushed stone, crushed gravel, or crushed slag.
 - 2. Well-graded, clean, hard, tough, durable, and sound mineral aggregates.
 - 3. Free of organic matter and contamination from chemical or petroleum products.
 - 4. Meet requirements of Table 2 of this Section.
 - 5. Gradation:
 - a. Establish job-mix (target) gradation within gradation target band listed in Table 3 of this Section.
 - b. Percent passing is based on total aggregate (dry weight), and fine and coarse aggregate having approximately same bulk specific gravities.
 - c. Test in accordance with AASHTO T11 and T27.

Table 2. Aggregate Properties		
Property	Requirements	Test Method
Dry Rodded Unit Weight	Not less than 75 lb./ft ³	AASHTO T19
Liquid Limit/Plastic Index	Non-plastic	AASHTO T89 AASHTO T90
Aggregate Wear	Not to exceed 50 percent.	AASHTO T96
Two Fractured Face	50% Minimum	AASHTO T335
CBR with 10 Pound Surcharge Measured at 0.20 Inch Penetration	70% Minimum	AASHTO T193

Table 3. Gradation Limits	
Sieve Size	Job Mix Gradation Target Band
1½ inch	100
1 inch	90 - 100
¾ inch	70 - 85
½ inch	65 - 80
⅜ inch	55 - 75
No. 4	40 - 65
No. 16	25 - 40
No. 200	7 - 11

d.

PART 3 EXECUTION

3.1 PREPARATION

- A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place untreated base course on soft, muddy, or frozen surfaces.
- C. Do not place untreated base course until subgrade is accepted by Engineer.

3.2 INSTALLATION

- A. Spread untreated base course over prepared subgrade.
- B. Minimize segregation of untreated base course during placement.
- C. Maintain optimum moisture content of untreated base course. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.
- D. Place aggregate in maximum 6-inch compacted layers. If total compacted thickness indicated on Drawings exceeds 6-inches, place in layers of equal thickness. If untreated base course is placed in successive layers, do not place next layer until previous layer has been tested and accepted.
- E. Grade surfaces to elevations indicated.
- F. Compact with self-propelled compaction equipment. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment.

3.3 TOLERANCES

- A. Moisture Content: Plus, or minus 2-percent of optimum. Test in accordance with ASTM D6938.
- B. Total Compacted Thickness: Plus, or minus ½-inch. If thickness exceeds tolerance, remove excess material and re-compact. If thickness is less than tolerance, scarify, add material, and re-compact.
- C. Top Surface of untreated base course: Plus, or minus 0.04-foot from required elevation.
- D. Surface Smoothness: Plus, or minus 3/8-inch measured with 10-foot straight edge.

3.4 FIELD QUALITY CONTROL TESTING

- A. Maximum Laboratory Density: Determined in accordance with AASHTO T180, Method D ASTM D1557.
- B. Establish roller patterns necessary to achieve density indicated.
- C. Density Tests: Perform in accordance with ASTM D6938.
 - 1. Frequency:
 - a. For small areas such as parking lots and driveways less than 2,500-square yards, take minimum of two tests for each 1,200-square yards per each layer.
 - b. For large areas such as roadways greater than or equal to 2,500-square yards, take minimum of one test for each 2,500-square yards per each layer.
 - 2. Acceptance: Equals or exceeds 97-percent of maximum laboratory density for each lot.
 - 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.
- D. Gradation Tests: Take samples from material on grade. Perform in accordance with AASHTO T11 and T27.
 - 1. Frequency: Per Table 5 of this Section. Lot may be evaluated on basis of fewer samples when minimum number cannot be obtained.
 - 2. Acceptance: Based on job-mix gradation and pay factor for gradation from Table 1 of this Section.
 - 3. If tests indicate material is not acceptable, make adjustments in production. If necessary, remove and replace Work.

3.5 FIELD ACCEPTANCE TESTING

- A. Maximum Laboratory Density: Engineer will determine in accordance with ASTM D1557.
- B. Establish roller patterns necessary to achieve density indicated.

- C. Density Tests: Engineer will perform in accordance with ASTM D6938.
1. Frequency: Random tests.
 - a. For small areas such as parking lots and driveways less than 2,500-square yards, take minimum of two tests for each 1,200-square yards per each layer.
 - b. For large areas such as roadways greater than or equal to 2,500-square yards, take minimum of one test for each 2,500-square yards per each layer.
 2. Acceptance: Equals or exceeds 96-percent of maximum laboratory density for each lot.
 3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.
- D. Gradation Tests: Engineer will take samples from material on grade and perform in accordance with AASHTO T11 and T27.
1. Frequency: Per Table 5 of this Section. Lot may be evaluated on basis of fewer samples when minimum number cannot be obtained. Random tests.
 2. Acceptance: Based on job-mix gradation and pay factor for gradation from Table 1 of this Section.
 3. If tests indicate material is not acceptable, make adjustments in production. If necessary, remove and replace Work.

Table 4. Gradation Sampling	
Lot (Tons)	Minimum No. of Samples
Greater than 2,500	4
1,500 to 2,500	3
Less than 1,500	2

3.6 PROTECTION

- A. Maintain adequate drainage.
- B. Maintain untreated base course until surface course is placed or until final acceptance.

END OF SECTION

SECTION 32 12 16
ASPHALT PAVING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Products and procedures for placing and compacting surface course of one or more layers of Hot Mix Asphalt (HMA) comprised of aggregate, asphalt binder, hydrated lime, and other additives.
 2. Mix design by Marshall Method.
 3. Option to incorporate Reclaimed Asphalt Pavement (RAP) materials into HMA pavement.
 4. Tack coat.
- B. Related Requirements:
1. Section 32 11 23 - Aggregate Base Courses.
 2. Section 32 17 23.13 – Painted Pavement Markings.

1.2 PRICE REDUCTION

- A. Pay Factor for Density: Engineer will calculate for each lot using Table 1 of this Section.

Table 1 Pay Factor for Density	
Percent of Marshall Density	Pay Factor
96 or Greater	1.00
92 to 95	0.90
Less than 92	0.50

- B. Pay Factor for Gradation and Asphalt Content: Engineer will calculate for each lot.

1. Asphalt Content:
 - a. Calculate mean of deviations.
 - b. Determine pay factor by using mean of deviations and Table 2 of this Section.

Table 2 Pay Factor for Asphalt Content			
Mean of Deviations			Pay Factor
1-3 Samples	4 Samples	5 Samples	
0-0.46	0-0.41	0-0.38	1.00
0.47-0.52	0.42-0.46	0.39-0.43	0.975

0.53-0.58	0.47-0.51	0.44-0.47	0.95
0.59-0.64	0.52-0.56	0.48-0.52	0.90
0.65-0.69	0.57-0.61	0.53-0.56	0.85

2. Gradation:
 - a. Calculate mean of deviations for each sieve size. Pay factor will be determined from Table 3 of this Section for each sieve size.
 - b. Pay factor for each lot will be lowest pay factor from all sieve sizes.
3. If test results for gradation or asphalt content are outside limits of 0.85 pay factor, Engineer may reject material and require removal or allow material to remain with pay factor of 0.50. Pay factor for gradation and asphalt content is lower value calculated for gradation or asphalt content.

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Table 3 Pay Factor for Gradation				
Sieve Size	Mean of Deviations			Pay Factor
	1-3 Samples	4 Samples	5 Samples	
½ Inch and Larger	0-6.3	0-5.6	0-5.2	1.00
	6.4-7.1	5.7-6.3	5.3-5.8	0.975
	7.2-7.9	6.4-7.0	5.9-6.4	0.95
	8.0-8.7	7.1-7.7	6.5-7.1	0.90
	8.8-9.5	7.8-8.4	7.2-7.7	0.85
3/8 Inch	0-5.9	0-5.3	0-4.9	1.00
	6.0-6.6	5.4-5.9	5.0-5.5	0.975
	6.7-7.3	6.0-6.6	5.6-6.1	0.95
	7.4-8.0	6.7-7.2	6.2-6.6	0.90
	8.1-8.9	7.3-7.9	6.7-7.2	0.85
No. 4	0-5.7	0-5.2	0-4.8	1.00
	5.8-6.3	5.3-5.8	4.9-5.4	0.975
	6.4-6.9	5.9-6.4	5.5-5.9	0.95
	7.0-7.5	6.5-7.0	6.0-6.5	0.90
	7.6-8.0	7.1-7.6	6.6-7.0	0.85
No. 8	0-4.8	0-4.3	0-4.0	1.00
	4.9-5.4	4.4-4.8	4.1-4.5	0.975
	5.5-6.0	4.9-5.3	4.6-4.9	0.95
	6.1-6.6	5.4-5.8	5.0-5.4	0.90
	6.7-7.2	5.9-6.4	5.5-5.8	0.85
No. 16	0-4.6	0-4.2	0-3.9	1.00
	4.7-5.1	4.3-4.6	4.0-4.3	0.975
	5.2-5.6	4.7-5.1	4.4-4.7	0.95
	5.7-6.1	5.2-5.5	4.8-5.1	0.90
	6.2-6.6	5.6-5.9	5.2-5.4	0.85
No. 50	0-3.8	0-3.4	0-3.2	1.00
	3.9-4.1	3.5-3.8	3.3-3.5	0.975
	4.2-4.5	3.9-4.1	3.6-3.8	0.95
	4.6-4.9	4.2-4.4	3.9-4.1	0.90
	5.0-5.5	4.5-4.9	4.2-4.5	0.85
No. 200	0-2.0	0-1.8	0-1.7	1.00
	2.1-2.2	1.9-2.0	1.8-1.9	0.975
	2.3-2.4	2.1-2.2	2.0-2.1	0.95
	2.5-2.7	2.3-2.4	2.2-2.3	0.90
	2.8-3.0	2.5-2.6	2.4-2.5	0.85

C. Price Adjustment: Engineer will calculate for each lot.

1. Final Pay Factor: Multiply pay factor for gradation and asphalt content time's pay factor for density.
2. If final pay factor is less than 0.85, Engineer may reject material and require removal, or allow material to remain in place with pay factor of 0.50.
3. Multiply final pay factor time's unit price for asphalt concrete mix for quantity represented by lot.

1.3 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
1. AASHTO M140 - Standard Specification for Emulsified Asphalt.
 2. AASHTO M226 - Standard Specification for Viscosity-Graded Asphalt Cement.
 3. AASHTO M303 - Standard Specification for Lime for Asphalt Mixtures.
 4. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
 5. AASHTO M323 - Standard Specification for Superpave Volumetric Mix Design.
 6. AASHTO T11 - Standard Method of Test for Materials Finer than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing.
 7. AASHTO T19 - Standard Method of Test for Bulk Density ("Unit Weight") and Voids in Aggregate.
 8. AASHTO T27 - Standard Method of Test for Sieve Analysis of Fine and Course Aggregates.
 9. AASHTO T90 - Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
 10. AASHTO T96 - Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
 11. AASHTO T104 - Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
 12. AASHTO T176 - Standard Method of Test for Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test.
 13. AASHTO TP61 - Standard Method of Test for Determining the Percentage of Fracture in Coarse Aggregate.
- B. ASTM International (ASTM):
1. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
 2. ASTM D6307 - Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method
- C. The Asphalt Institute (TAI):

1. TAI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

1.4 DEFINITIONS

- A. Lot: Number of tons of HMA placed in production day.
- B. Mean of Deviations: Sum of absolute values of deviations from mix design divided by number of samples in lot.
- C. Non-Permeable HMA: Asphalt pavement that water will not penetrate through mix when water is placed on surface of pavement.
- D. Production Day: 24 hour period in which HMA is being placed.
- E. Recycled Asphalt Pavement (RAP): Crushed or milled asphalt materials that have been removed from pavements. Aggregates contained in these materials are required to meet material requirements of Article 2.1 of this Section, except sand equivalent.

1.5 SUBMITTALS

- A. Product Data:
 1. Submit product information for asphalt and aggregate materials.
 2. Submit mix design with laboratory test results supporting design.
- B. Aggregate Source: Identify source and submit test results showing aggregate meets requirements of Article 2.1 of this Section.
- C. Mix design: Submit at least 10 days before paving begins.
 1. Include test data used to develop mix design.
 2. Indicate single value for percentage of aggregate passing each sieve and asphalt cement content. Provide gradation within each band shown on Table 4 of this Section.
- D. Changes to Mix Design: Submit in writing prior to production.
- E. Corrective action plan according to Article 3.4 of this Section.
- F. Sample: Provide sample to Engineer for calibration of burn off oven.

1.6 QUALITY ASSURANCE

- A. Obtain materials from same source throughout Work.

1.7 QUALIFICATIONS

- A. Installer: Company specializing in performing work of this section with minimum of 5 years' experience.

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1.8 LIMITATIONS

- A. Do not place hot mix asphalt between October 16 and April 14.
- B. Do not place hot mix asphalt when ambient air or base surface temperature is less than 50 degrees Fahrenheit, or surface is wet or frozen.
- C. Do not place hot mix asphalt when base has free surface water, base is over saturated, or frozen.
- D. Do not place hot mix asphalt during adverse weather conditions such as rain.
- E. Use release agent that does not dissolve asphalt and is acceptable to Engineer for equipment and hand tools used to mix, haul, and place HMA.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Asphalt Binder:
 - 1. Performance Graded (PG) Asphalt Binder: PG58-28 in accordance with Table 1 of AASHTO M320, or AC10 in accordance with Table 2 of AASHTO M226.
- B. Anti-Striping Agent: Use one of following materials.
 - 1. Chemical anti-striping agent as accepted by Engineer.
 - 2. Hydrated Lime: AASHTO M303, use minimum 1 percent of dry weight of aggregate.
 - a. Hydrated Lime Chemical Limits:
 - 1) Hydrated Alkalinity: Minimum 90 percent by weight CaCO_3 .
 - 2) Hydrated Lime Content: Maximum 7 percent by weight CaO .
 - 3) Free Water Content: Maximum 3 percent by weight.
 - b. Hydrated Lime Physical Requirements:
 - 1) Residue Retained on No. 30 Sieve: Maximum 2 percent by weight.
 - 2) Residue Retained on No. 200 Sieve: Maximum 12 percent by weight.
- C. Aggregate: Natural gravel, crushed rock, or slag with uniform density and quality. Gradation per Table 4 of this Section.
- D. Course Aggregate: Clean, hard, durable, and sound fragments free from organic matter or other detrimental substances.
 - 1. Retained on No. 4 sieve.
 - 2. All Rounded Particles: Maximum 50 percent by weight.

- E. Fine Aggregate: Clean, hard grained, and angular.
1. Passing No. 4 sieve.
 2. Non-plastic in accordance with AASHTO T90.
 3. Vegetable Matter or Other Detrimental Substances: Maximum 2 percent by weight.
 4. Dry-Rodded Unit Weight: AASHTO T19, minimum 75 pounds per cubic foot.
 5. Wear: AASHTO T96, maximum 40 percent.
 6. Weight Loss: AASHTO T104, maximum 16 percent by weight when subjected to five cycles of sodium sulfate.
 7. Sand Equivalent: AASHTO T176, minimum 40.

Table 4 Gradation Limits for Mix Design	
Sieve Size	Percent of Total Aggregate Passing (Dry Weight)
½ inch	100
No. 4	60-80
No. 16	28-42
No. 50	11-23
No. 200	5-9

- F. Reclaimed Asphalt Pavement (RAP): Not required, but may be used.
1. Do not adjust asphalt binder grade if lower end is already PG XX-34.
 2. Do not adjust asphalt binder grade when RAP content is not more than 15 percent by total weight of hot mix and RAP asphalt binder content is not more than 15 percent of total asphalt binder content by weight.
 3. Adjust asphalt binder grade according to AASHTO M323 when RAP asphalt binder content is between 15 to 25 percent of asphalt binder weight.
 - a. Select one grade softer than grade specified. Do not adjust asphalt binder grade if lower end is already PG XX-34.
 - b. Provide test reports indicating that PG grade and quantity of recovered asphalt binder is consistent throughout stockpile.
 - c. Limit RAP to 25 percent of total weight of hot mix asphalt and RAP binder to 25 percent of total binder.
 4. RAP aggregate is required to meet material requirements of Article 2.1 of this Section, except sand equivalent.
- G. Provide HMA mix that when placed and compacted on finish grade will produce non-permeable HMA.

- H. Warm Mix: Meet design requirements of HMA.

2.2 EQUIPMENT

- A. Asphalt Paver: Use self-propelled paver with screed. Paver must be equipped with acceptable automatic control system, which controls longitudinal grade and transfer slope, except when paving miscellaneous areas or when Engineer determines use of automatic control system is impractical.
- B. Asphaltic Mixture Hauling Vehicles: Use trucks with tight clean and smooth boxes.
- C. Rollers: Use rubber tire and steel self-propelled rollers in sufficient number to keep up with paver. Use release agent other than diesel.

2.3 MIX DESIGN

- A. Develop mix design in accordance with TAI MS-2, Marshall Method
 1. Determine optimum asphalt content by test data curves.
 2. Use test samples containing 0.5 percent increments of asphalt content.
 3. Include minimum of 2 test samples above and below optimum asphalt content.
- B. Mix Design Requirements:
 1. Marshall Stability: Minimum 1,800 pounds.
 2. Flow (0.01 inch): 10 to 18.
 3. Air Voids: 3 to 5 percent.
 4. Voids in Mineral Aggregate: Minimum 14 percent.
 5. Index of Retained Strength: Minimum 75 percent.
 6. Dry Stability: Minimum 200 pounds per square inch.
- C. If material source changes, develop new mix design prior to using new materials.
- D. Mix materials at central mixing plant. Use shortest mixing time needed to uniformly coat aggregate. Do not use material not mixed properly.
- E. Adjust production at mixing plant and delivery to maintain steady paving speed.

2.4 TACK COAT

- A. Tack Coat: AASHTO M140, grade SS-1H or SS-1, emulsified asphalt.

PART 3 EXECUTION

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3.1 EXAMINATION

- A. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.
- B. Verify gradients and elevations of base are correct. Do not place asphalt concrete pavement until base course has been accepted.

3.2 PREPARATION

- A. Locate and reference utility covers prior to paving operations.
- B. Where new pavement joins existing pavement, saw cut edge of existing pavement. Provide saw cut through full depth of pavement and in straight line. If pavement is cracked, broken or deteriorated, make saw cut so defective area is removed. Properly dispose of pavement removed by saw cutting.
- C. Remove dirt, sand, leaves, and other objectionable materials from prepared surfaces.
- D. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.
- E. Repair surface defects in existing paving to provide uniform surface to receive new paving.

3.3 INSTALLATION

- A. Tack Coat:
 - 1. Apply tack coat at applicable rate indicated in Table 5 of this Section. Review application rate with Engineer prior to placing tack coat.
 - 2. Apply tack coat to contact surfaces of curbs, gutters, existing pavement, previously placed asphalt pavement and other surfaces. Apply tack coat to all asphalt pavement joints.
 - 3. Apply tack coat same day hot mix asphalt is placed.
 - 4. If previous pass has cooled below 175 degrees Fahrenheit, then apply tack coat to longitudinal edge before placing adjacent pavement.

Table 5 Tack Coat Application Rate (gal/yd ²)				
Pavement Condition	Residual	Undiluted	1:1 Dilute	2:1 Dilute
New HMA	0.03	0.05	0.10	0.08
Oxidized HMA	0.05	0.09	0.18	0.13
Milled HMA	0.07	0.12	0.24	0.18
Residual: Asphalt binder content needed on pavement.				
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Undiluted and 1:1 and 2:1 Dilute: Adjust application rate if emulsion is not 60 percent residual asphalt.

- B. Single Course HMA Paving:
1. Place HMA to thickness indicated on Drawings.
 2. Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
 3. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.
- C. Double Course HMA Paving:
1. Provide minimum compacted course thickness of 3 time's nominal maximum aggregate size.
 2. Place first course of hot mix asphalt to appropriate compacted thickness.
 3. Place second course of hot mix asphalt within 24 hours of placing and compacting first course. When first course is placed more than 24 hours before placing second course, clean surface and apply tack coat before placing second course.
 4. Compact each course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
 5. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.
- D. HMA Lane Leveling:
1. Apply tack coat to existing paving surface.
 2. Vary depth as necessary to fill low areas.
 3. Compact by rolling to indicated density. Achieve even and smooth finish without roller marks.
 4. Apply lane leveling prior to overlay and other improvements.
- E. HMA Paving Overlay:
1. Apply tack coat to existing paving surface at rate indicated.
 2. Provide minimum compacted course thickness of 3 time's nominal maximum aggregate size.
 3. Compact overlay by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
 4. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.
- F. Place HMA at temperature between 250 and 325 degrees Fahrenheit with self-propelled laydown machine. Adjust paver speed to match plant production and delivery for continuous paving operation.

Commented [BP1]: Applicable anywhere on this project?

- G. Provide 3:1 (horizontal to vertical) sloped edge to adjacent lane to be paved when full-width or Echelon paving is impractical and more than one pass is required.
- H. Joints:
 - 1. Offset longitudinal joints 6 to 12 inches in succeeding courses.
 - 2. Place top course joint within one foot of roadway center line or lane line.
 - 3. Offset transverse construction joints at least 6 feet.
 - 4. For roller breakdown pass on confined edge, keep 6 inches from confined edge on hot side of mat to ensure joint density.
 - 5. For roller breakdown pass on unconfined edge, overlap unconfined edge at least 6 inches off of mat to prevent pavement from spreading.
 - 6. Compact joint density to at least 92 percent of Marshall density.
 - 7. Overlap screed onto previously placed mat $\frac{3}{4}$ to 1 inch maximum.
 - 8. Do not rake longitudinal joint.
- I. Hand rake only when necessary.

3.4 CEASE PRODUCTION

- A. Cease production when any two out of three consecutive lots meet one of following criteria:
 - 1. Pay factor is less than 1.00.
 - 2. Air voids are not within tolerance.
 - 3. VMA averaged for each lot are not within plus or minus 1.25 percent of target value.
- B. Submit corrective action plan to Engineer before production continues indicating changes in production procedures that will be implemented to correct deficiencies. Address specific issues contributing to cease production directive. Submit for Engineer to review and accept revised plan before production continues.
- C. Engineer may require new mix design.

3.5 TOLERANCES

- A. Smoothness: Maximum variation of $\frac{1}{4}$ inch measured longitudinally, transversely, and at construction joints with 10 foot straight edge or string line. Correct depressions or humps exceeding tolerances.
- B. Compacted Thickness:
 - 1. Owner accepts lot for thickness when:
 - a. Average thickness of all sublots is not more than $\frac{1}{2}$ inch greater, or $\frac{1}{4}$ inch less than total thickness specified.
 - b. No individual subplot shows deficient thickness of more than $\frac{3}{8}$ inch.

2. Excess Thickness: Engineer may allow excess thickness to remain in place or may order excess thickness to be removed.
 - a. Owner will pay for 50 percent of HMA in excess of 1/2 inch tolerance when excess thickness is allowed to remain in place.
 - b. Deficient Thickness: Place additional material where lots or sublots are deficient in thickness.
 - 1) Owner will pay for HMA necessary to reach specified thickness.
 - 2) If excess HMA is placed, Owner will pay for 50 percent of HMA over specified thickness.

C. Variation from Indicated Elevation: Within 1/2 inch.

3.6 FIELD ACCEPTANCE TESTING

- A. Gradation and Asphalt Content: Engineer will take random samples immediately behind paver before compaction and test in accordance with AASHTO T11 and T27 and ASTM D6307.
 1. Frequency: Per Table 6 of this Section.
 2. If tests indicate materials are not acceptable, make adjustments in production. If necessary, remove and replace work. Lot may be evaluated on basis of fewer samples when minimum number cannot be obtained.

Table 6 Gradation and Asphalt Content Sampling	
Lot (tons)	Minimum No. of Samples
Greater than 2,500	4
1,500 to 2,500	3
Less than 1,500	2

- B. Density: Engineer will perform density tests with nuclear gage in accordance with ASTM D2950 or take core samples.
 1. Acceptance will be based on average of all density determinations made per lot.
 2. Lot will be divided into sublots of approximately 1,500 square yards. Take minimum of one density determination for each subplot. Determine test location using random numbers table.
 3. Pay factors will be determined in accordance with Table 1 of this Section.
- C. Joint Density: Engineer will perform density tests with nuclear gage in accordance with ASTM D2950 or take core samples.
 1. Acceptance will be based on average of density determinations made per lot.

2. Lot will be divided into 5 sublots of approximately 1,500 square yards. Take minimum of one density determination for each subplot. Determine test location using random numbers table.
3. Joint density for each individual subplot shall be not less than 92 percent of Marshall density. Engineer may require corrective action plan if joint density falls below 92 percent of Marshall density.

D. HMA Temperature: Measure temperature at time of placement.

3.7 PROTECTION

- A. Do not allow traffic to cross saw cut edge of existing pavement unless temporary ramp is constructed.
- B. Protect structures, and other objects from being spattered or marred by tack coat.
- C. Do not allow construction vehicles, general traffic, or rollers to pass over uncompacted end or edge of freshly placed mix until mat temperature drops to point where damage or differential compaction will not occur.
- D. Immediately after placement, protect paving from mechanical injury for 3 hours or until surface temperature is less than 140 degrees Fahrenheit. Prevent traffic from crossing vertical edge of pavement.

END OF SECTION

SECTION 32 13 13
CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes portland cement concrete pavement for roadways and parking lots.
- B. Related Requirements:
 - 1. Section 03 10 00 - Concrete Forming and Accessories.
 - 2. Section 03 20 00 - Concrete Reinforcing.
 - 3. Section 03 30 00 - Cast-In-Place Concrete.
 - 4. Section 32 11 23 - Aggregate Base Courses.

1.2 REFERENCE STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement.
 - 2. ASTM A775 - Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
 - 3. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

1.3 PRE-INSTALLATION MEETINGS

- A. **[Convene pre-installation meeting minimum one week prior to commencing work of this Section.]**

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1.4 SUBMITTALS

- A. Product Data: Submit data for reinforcement, joint materials, sealant, curing materials and accessories.
- B. Joint Layout Plan: Submit at least 10 days prior to placing concrete.

1.5 FIELD CONDITIONS

- A. Do not place concrete when base is frozen, base has surface has free surface water, or base is over saturated.
- B. Do not place concrete during adverse weather conditions such as rain or snow.

- C. Follow hot and cold weather concreting requirements in accordance with Section 03 30 00.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Concrete: Class AA(AE) in accordance with Section 03 30 00.
- B. Reinforcement:
 - 1. Reinforcing Steel and Wire Fabric: In accordance with Section 03 20 00.
 - 2. Dowels: ASTM A615, 60 ksi yield strength, unfinished, plain, smooth bars that are lightly greased or equal products as accepted by Engineer.
- C. Expansion Joint Filler: ASTM D1751, asphalt impregnated fiberboard, ½ inch thick.
- D. Backer Rod: Closed-cell polyethylene foam rod compatible with sealant.
- E. Sealant: Cold-pour single component silicone for use with Portland cement concrete pavement.
- F. Curing Material: In accordance with Section 03 30 00.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify compacted base is acceptable and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.

3.2 FORMING

- A. Place forms in accordance with Section 03 10 00.
- B. Place and secure forms to correct location, dimension, profile, and gradient.
- C. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

3.3 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.

- B. Notify Engineer minimum 24 hours prior to commencement of concreting operations.

3.4 PLACING CONCRETE

- A. Place reinforcement as indicated on Drawings and in accordance with Section 03 20 00.
- B. Place concrete in accordance with Section 03 30 00.
- C. Place concrete continuously over full width of the panel and between predetermined construction joints. Do not break or interrupt successive placement such that cold joints occur.
- D. Strike off and consolidate concrete with mechanical finishing machine or vibrating screed, or other acceptable method.
 - 1. If screed is used, carry minimum 2 inches of concrete in front of screed for full width of screed.
 - 2. Place concrete with slip form paver designed to spread, consolidate, screed, and float-finish concrete in one pass.
 - 3. Use hand finishing methods for small pavement areas or small Projects.
- E. Make skid-resistant finish with burlap drag or broom.
- F. Cure concrete in accordance with Section 03 30 00.
- G. Expansion Joints: Place as indicated on Drawings.
- H. Control Joints:
 - 1. Unless indicated otherwise on Drawings, space no more than 12 feet apart in any direction.
 - 2. Form by power saw cutting to depth of 1/4 slab thickness.
 - 3. Begin when concrete has hardened sufficiently to permit sawing without excessive raveling.
 - 4. Complete before shrinkage cracking occurs.
 - 5. Make continuous across slab.
 - 6. Clean and seal before opening to traffic.
 - 7. Place backer rod and sealant in prepared joint in accordance with manufacturer's recommendations.
- I. Construction Joints. Place backer rod and sealant in prepared construction joints in accordance with manufacturer's recommendations.

3.5 TOLERANCES

- A. Maximum Variation of Surface Flatness: 1/4 inch in 10 feet.

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3.6 FIELD ACCEPTANCE TESTING

- A. Engineer will perform air, slump, and strength tests in accordance with Section 03 30 00.

3.7 PROTECTION

- A. Immediately after placement, protect concrete pavement from premature drying, excessive hot or cold temperatures, and mechanical injury.
- B. Do not permit traffic on concrete pavement for 28 days after placement.

END OF SECTION

SECTION 32 16 00
CURBS, GUTTERS, SIDEWALKS, AND DRIVEWAYS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Concrete curb and gutter, cross gutter, and H curb.
 - 2. Concrete driveway, sidewalk, and other flatwork.
 - 3. Concrete curb ramps.
 - 4. Detectable warning surface.
- B. Related Requirements:
 - 1. Section 03 10 00 – Concrete Forming and Accessories.
 - 2. Section 03 20 00 – Concrete Reinforcing.
 - 3. Section 03 30 00 – Cast-in-Place Concrete.
 - 4. Section 31 23 13 – Subgrade Preparation.
 - 5. Section 31 23 16 – Excavation.
 - 6. Section 32 11 23 – Aggregate Base Courses.

1.2 REFERENCE STANDARDS

- A. American Association of State Highway and Transportation Officials (AASHTO):
 - 1. AASHTO M306 - Standard Specification for Drainage, Sewer, Utility, and Related Castings.
- B. ASTM International (ASTM):
 - 1. ASTM A48 - Standard Specification for Gray Iron Castings.
 - 2. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
- C. Utah Department of Transportation (UDOT):
 - 1. UDOT PA Series Standard Drawings.

1.3 SUBMITTALS

- A. Product Data: Submit data for reinforcing steel, joint materials, sealant, curing materials and accessories.

1.4 FIELD CONDITIONS

- A. Do not place concrete when base surface temperature is less than 40 degrees Fahrenheit, base has free surface water, or base is saturated.

- B. Do not place concrete during adverse weather conditions such as rain or snow.
- C. Follow hot and cold weather concreting requirements in accordance with Section 03 30 00.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Base: Untreated base course in accordance with Section 32 11 23, or rock with $\frac{3}{4}$ -inch maximum gradation.
- B. Reinforcing Steel: In accordance with Section 03 20 00.
- C. Concrete: Class AA(AE) in accordance with Section 03 30 00.
- D. Curing Material: In accordance with Section 03 30 00.
- E. Expansion Joint Filler: ASTM D1751, asphalt impregnated fiberboard, $\frac{1}{2}$ -inch thick.
- F. Sealant: Cold-pour single component silicone for use with Portland cement concrete pavement.
- G. Detectable Warning Surface:
 - 1. Use in-line truncated dome pattern that meets requirements of UDOT PA Series Standard Drawings.
 - 2. Provide color that contrasts visually with adjoining surfaces, either light-on-dark or dark-on-light.
 - 3. Minimize number of panels used. Acceptable modular panel sizes are:
 - a. 2-feet by 2-feet.
 - b. 2-feet by 3-feet.
 - c. 2-feet by 4-feet.
 - d. 2-feet by 5-feet.
 - 4. Acceptable Products:
 - a. Polymer Composite Panel:
 - 1) Epoxy polymer composition.
 - 2) Homogenous integral color, UV stable, skid resistant, and non-glare finished.
 - 3) Use for new construction or retrofit construction.
 - b. Precast Concrete Panel:
 - 1) Fiber reinforced high strength composition.
 - 2) Homogeneous integral color, UV stable, and slip resistant.
 - 3) Use for new construction only.
 - c. Gray Iron Casting Panel:

- 1) ASTM A48, Class 35B, as specified in AASHTO M306, iron composition with embedment anchors.
- 2) Reasonably smooth, uniform quality, slip resistant, weathered iron finish, cleaned by shot blasting, free from sand holes, burned-on sand, bas holes, cracks, and other surface defects.
- 3) Use for new construction only.

PART 3 EXECUTION

3.1 PREPARATION

Indicate reference section for subgrade preparation.

- A. Prepare subgrade in accordance with Section 31 23 13 and 31 23 16.
- B. Place and compact base material.
- C. Verify gradients and elevations of base are correct.
- D. Cut and prepare areas to be joined to existing concrete.

3.2 FORMING

- A. Place forms in accordance with Section 03 10 00.
- B. Place and secure forms to correct location, dimension, profile, and gradient.
- C. Assemble formwork to permit easy stripping and dismantling without damaging concrete.
- D. Place joint filler vertical and in straight lines. Secure to formwork during concrete placement.
- E. Use of slip form machine is acceptable for placement of curb and gutter and monolithic sidewalk, curb and gutter.

3.3 PLACING CONCRETE

- A. Place reinforcement as indicated on Drawings and in accordance with Section 03 20 00.
- B. Notify Engineer minimum 48-hours prior to placing concrete.
- C. Moisten base to minimize absorption of water from fresh concrete.
- D. Place concrete continuously between predetermined construction joints in accordance with Section 03 30 00.

- E. Slope concrete uniformly to drain without bird baths.
- F. Cure in accordance with Section 03 30 00.

3.4 DETECTABLE WARNING SURFACE

- A. Install detectable warning surface according to manufacturer's installation instructions.
 - 1. Polymer Composite Panel:
 - a. Install cast-in-place panel directly into finished concrete surface. Provide smooth transition between panel and surrounding concrete.
 - b. Install surface-applied panel directly on existing concrete surface. Use mechanical fasteners to secure panel to existing surface. Caulk smooth transition bead along beveled panel edge and surrounding concrete surface.
 - 2. Precast Concrete Panel and Gray Iron Casting Panel:
 - a. Install using cast-in-place method.
 - b. Provide smooth transition between panel and surrounding concrete.
- B. Where indicated on Drawings, replace detectable warning surface.
 - 1. Remove existing surface-applied detectable warning surface without damaging concrete surface.
 - 2. Clean concrete surface and install new detectable warning surface according to manufacturer's installation instructions.

3.5 JOINTS

- A. Curbs and Gutters:
 - 1. Control Joints: Score or saw cut at 10-feet on center.
 - 2. Expansion Joints: Place premolded joint filler at 50-feet on center and at beginning and ending of curb returns at intersections. When concrete is placed with slip form machine, place at beginning and end of each continuous run.
- B. Driveways, Sidewalks and Other Flatwork: Unless indicated otherwise on Drawings, form joints as follows.
 - 1. Control Joints: Score or saw cut at spacing equal to width. Do not exceed 12-foot spacing.
 - 2. Expansion Joints: Place premolded joint filler at 50-feet on center for exterior concrete flatwork.
- C. When curb and gutter and sidewalk or other flatwork are back-to-back, align joints.
- D. Make construction joints at necessary intervals.

3.6 FINISHING

- A. Round edges to ½-inch radius.
- B. Hand methods of strike-off and consolidation are permitted.
- C. Finish surface smooth with concrete finishing tool.
 - 1. Do not add water to surface of concrete.
 - 2. Remove marks or irregularities from finish surface.
- D. Provide light broom finish.
 - 1. Flatwork: Finish transverse to traffic.
 - 2. Curbs and Gutters: Finish parallel to flow line.

3.7 BACKFILLING

- A. After concrete has cured sufficiently to prevent damage, place backfill to finish grade as indicated on Drawings.
- B. Compact backfill material to 96 percent of maximum laboratory density.

3.8 TOLERANCES

- A. Maximum Variation of Surface Smoothness: ¼-inch in 10-feet.

3.9 FIELD QUALITY CONTROL AND ACCEPTANCE TESTING

- A. Perform air, slump, and strength tests in accordance with Section 03 30 00.

3.10 PROTECTION

- A. Immediately after placement, protect concrete pavement from premature drying, excessive hot or cold temperatures, mechanical injury, and defacing.
- B. Do not operate compaction equipment near concrete for at least 7-days after placement.
- C. Do not permit traffic on concrete improvements for 14-days after placement.

END OF SECTION

SECTION 32 17 23.13
PAINTED PAVEMENT MARKINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Traffic lines and other markings.
 - 2. Traffic Paint.
- B. Related Requirements:
 - 1. Section 01 50 00 – Temporary Facilities and Controls.
 - 2. Section 32 12 16 – Asphalt Paving.

1.2 REFERENCE STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM D562 – Standard Test Method for Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using a Stormer-Type Viscometer.
 - 2. ASTM D1475 – Standard Test Method for Density of Liquid Coatings, Inks, and Related Products.
 - 3. ASTM D1644 – Standard Test Methods for Nonvolatile Content of Varnishes.
 - 4. ASTM D2205 – Standard Guide for Selection of Tests for Traffic Paints.
 - 5. ASTM D2743 – Standard Practices for Uniformity of Traffic Paint Vehicle Solids by Spectroscopy and Gas Chromatography.
 - 6. ASTM D2805 – Standard Test Method for Hiding Power of Paints by Reflectometry.
 - 7. ASTM D3723 - Standard Test Method for Pigment Content of Water-Emulsion Paints by Low-Temperature Ashing.
 - 8. ASTM D3960 – Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
 - 9. ASTM D5381 – Standard Guide for X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders.
 - 10. ASTM E1347 – Standard Test Method for Color and Color-Difference Measurement by Tristimulus Colorimetry.
- B. Federal Standard 595B – Colors Used in Government Procurement.

1.3 QUALITY ASSURANCE

- A. Obtain materials from same source throughout Work.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Apply paint when pavement surface is dry and when air and pavement temperatures are 50 degrees Fahrenheit and rising.
- B. Do not apply paint when windy, dusty, foggy, or when rain is anticipated.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Paint: Meet requirements for acrylic water based paint as indicated in Table 1 of this Section.

Table 1. Paint Requirements				
Property	White	Yellow	Black	Test
Pigment – Percent by weight, minimum	62.0	62.0	62.0	ASTM D3723
Total Solids – Percent by weight, minimum	77.0	77.0	77.0	ASTM D1644
Nonvolatile vehicle – Percent by weight vehicle, minimum*	43.0	43.0	43.0	ASTM D3723 ASTM D1644
Viscosity, KU @ 77 degrees F	80 – 95	80 – 95	80 – 95	ASTM D562
Density, lb./gal, minimum	14.0	14.0	14.0	ASTM D1475
Volatile Organic Content (VOC) – lb/gal, maximum	1.25	1.25	1.25	ASTM D3960
Titanium Dioxide Content, lb/gal	1.0 min	0.2 max	N/A	ASTM D5381
Color Definition	37875	33538	N/A	Federal Standard 595B
Directional Reflectance Minimum	90.0	50.0	N/A	ASTM E1347
Dry Opacity – Minimum (5 mils wet)	0.95	0.95	N/A	ASTM D2805
* Binder: 100 percent acrylic cross-linking polymer, by weight, as determined by infrared analysis and other chemical analysis available in accordance with ASTM D2205.				

- 1. No-Pick-Up Time: Use paint that will not smear or track three minutes after application to pavement using standard application equipment, and with ambient shaded temperature of at least 50 degrees Fahrenheit.

2. Additional requirements:
 - a. Be free of lead, chromium, or other related heavy metals in accordance with ASTM D5381.
 - b. Meets indicated ASTM requirements when tested in accordance with ASTM D2743 and D5381.
- B. Colors: [As follows indicated on Drawings.]
 1. Blue and White: Accessible parking insignia.
 2. Red: Curb for no parking.
 3. White: Traffic lanes and parking stalls.
 4. Yellow: Traffic center line.

2.2 EQUIPMENT

- A. Use atomizing spray-type marking machine suitable for application of traffic paint.
- B. Use hand-operated equipment for markings not suitable for marking machine.

PART 3 EXECUTION

3.1 PREPARATION

- A. Do not apply paint until asphalt pavement or seal coat has cured minimum of 1 week.
- B. Remove dirt, grease, vegetation, and other foreign matter from pavement surface by blowing, sweeping, or scrubbing.
- C. Line Control:
 1. Establish control points.
 2. Maintain line within 2 inches of required location.

3.2 APPLICATION

- A. Apply paint to clean and dry surface during daylight hours.
- B. Apply paint uniformly at following rates.
 1. Solid Stripe 4 Inches Wide: 190 to 240 linear feet per gallon.
 2. Other Markings: One gallon per 100 square feet.
- C. Record number of gallons of paint used.
- D. No additional payment will be made for pavement markings placed in excess of required application rate or exceeding dimensional requirements.

- E. Remove and repaint any line or legend failing to meet bead adherence and dimensional requirements at no cost to Owner.

3.3 TOLERANCES

- A. Width: Plus or minus 5 percent of width indicated.

3.4 PROTECTION

- A. Protect marking until dry or cured. In event that uncured marking is damaged, reapply marking and remove track marks left on pavement at no additional cost to Owner.

3.5 CLEANING

- A. Remove drips, overspray, improper markings and paint tracked by traffic.

END OF SECTION

SECTION 33 14 15
SITE WATER UTILITY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe, fittings, valves and accessories for water lines.
 - 2. Water service pipe and accessories.
 - 3. Fire hydrants.
 - 4. Thrust restraint devices.
 - 5. Disinfection.
 - 6. Pressure testing.
- B. Related Requirements:
 - 1. Section 03 30 00 – Cast-In-Place Concrete.
 - 2. Section 31 23 16.13 - Trenching.

1.2 REFERENCE STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM D2241 – Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR).
 - 2. ASTM F477 - Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- B. American Water Works Association (AWWA):
 - 1. AWWA C104 – Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water.
 - 2. AWWA C115 – Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
 - 3. AWWA C151 – Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids.
 - 4. AWWA C153 – Ductile-Iron Compact Fittings, 3 In. through 24 in. (76mm through 610 mm) and 54 in. through 64 In. (1,400 mm through 1,600 mm), for Water Service.
 - 5. AWWA C502 – Dry Barrel Fire Hydrants.
 - 6. AWWA C509 – Resilient Seated Gate Valves 3 in. through 12 in. NPS, for Water and Sewage Systems.
 - 7. AWWA C651 – Disinfecting Water Mains.
 - 8. AWWA C800 – Threads for Underground Service Line Fittings.
 - 9. AWWA C901 – Polyethylene (PE) Pressure Pipe, Tubing, and Fittings, ½ inch through 3 inch, for Water.
- C. National Sanitation Foundation (NSF):
 - 1. NSF-14 - Standard for Thermoplastic Materials, Pipe, Fittings, Valves, Traps and Joining Materials.
 - 2. NSF 61 - Drinking Water System Components - Health Effects.

1.3 DEFINITIONS:

- A. Bedding: Fill placed under, beside, and directly over pipe to 12 inches above top of pipe, prior to subsequent backfill operations.

1.4 SYSTEM REQUIREMENTS

- A. Burial Depth: Minimum 4 feet for main lines, except 5 feet required within UDOT right-of-way.

1.5 SUBMITTALS

- A. Product Data: Provide data for pipe, pipe fittings, valves, service line, thrust restraint devices, tracer wire, splice capsules, fire hydrants, and accessories.
- B. Test Results: Submit one copy of each bacteriological test results.

1.6 REGULATORY REQUIREMENTS

- A. Conform to requirements of Utah Department of Environmental Quality and Owner.

PART 2 PRODUCTS

2.1 PIPE

- A. PVC Pipe: 4 inch diameter and larger.
 - 1. Class 200, SDR 21, PVC pipe in accordance with ASTM D2241.
 - 2. Bell and spigot joints with elastomeric gaskets in accordance with ASTM F477.
 - 3. Color: Blue.
 - 4. Certification: NSF 61 approved and bear NSF label.
 - 5. Pipe Fittings: AWWA C153, Class 350 compact fittings with mechanical joints and gaskets.
- B. Sleeve Coupling: Class 350, ductile iron, mechanical joints with gaskets, 12 inch minimum length. Manufactured by Tyler Pipe or equal.

2.2 VALVES

- A. Gate Valve: AWWA C509, iron body, bronze trim, non-rising stem with 2 inch square operator nut, single wedge, resilient seat. Rated for 200 pounds per square inch working pressure. Shall open by turning operator nut counter-clockwise.
- B. Valve Box & Cover: Cast iron, extension sleeve type, cast word WATER on cover.

2.3 FIRE HYDRANTS

- A. Hydrant: AWWA C502, dry barrel type, with minimum 5.25 inch diameter valve seat opening, break-off flange at ground level, drip valve, 200 psi working pressure, 4.5 feet minimum burial depth to bottom of pipe. Shall open by turning pentagon operator nut counter-clockwise. Shall have 30 inch minimum height above finish grade.
- B. Hose and Steamer Connection: Two 2.5 inch hose nozzles and one 4.5 inch pumper nozzle with standard threads, caps, gaskets and attaching chains.
- C. Finish: Primer and two coats of red enamel.
- D. Acceptable Manufacturers:
 - 1. Guardian model by Kennedy Valve.
 - 2. Super Centurion model by Mueller Company.
 - 3. American AVK Company.
 - 4. No substitutes permitted.

2.4 SERVICES

- A. Service Line: High density polyethylene pipe, in accordance with AWWA C901.
 - 1. Copper Tube Size: 2 inch services.
 - 2. Working Pressure: 200 pounds per square inch.
 - 3. Certification: NSF 61 approved and bear NSF label.
 - 4. Color: Blue.
- B. Fittings: Bronze, Mueller 110 compression fittings.
- C. Meter: Use existing meter.

2.5 ACCESSORIES

- A. Thrust Restraint Devices: Use one of following:
 - 1. Concrete Thrust Blocks: Class B or B(AE) concrete in accordance with Section 03 30 00.
 - 2. Restrained Joints:
 - a. Pipe: Bell and spigot joint restraint harness or clamp. Rated at pressure class of pipe or greater.
 - b. Pipe Fittings: Mechanical joint with restrained follower gland. Rated at pressure class of pipe or greater. Megalug, or equal.
- B. Tracer Wire: 14/1 UF direct burial wire.
 - 1. Splices: 3M Company, Cat. No. MH14 BCX heat shrink butt splice or equal.
 - 2. Color: Blue.

- C. Bedding:
 - 1. Excavated materials consisting of earth, loam, sandy clay, sand, and gravel which are free from clods of earth, rocks larger than 0.75 inch, frozen material, organic material and debris.
 - 2. If excavated material is unsuitable or insufficient for bedding after screening, import bedding consisting of pitrun gravel, crushed rock with sand, or sand, with 0.75 inch maximum size gradation.

PART 3 EXECUTION

3.1 PREPARATION

- A. Verify location, depth, material, and size of existing water lines.
- B. Excavate pipe trench in accordance with Section 31 23 16.13. Hand trim excavation for accurate placement of pipe.
- C. Remove large rocks or other hard matter which could damage pipe or impede installation.
- D. Remove water from trench.

3.2 INSTALLATION – PIPE

- A. Install pipe and fittings. Seal joints watertight. Route pipe in straight line.
- B. Place bedding material at sides of pipe and over pipe in layers not exceeding 6 inches compacted depth. Place bedding to minimum compacted thickness of 12 inches above top of pipe.
- C. If excavated material is unsuitable for bedding or trench bottom is unsuitable to support pipe, import granular bedding.
- D. Compact bedding to 96 percent of maximum laboratory density. Maintain moisture content of bedding material within plus or minus 2 percent of optimum to attain required compaction density.
- E. Install tracer wire continuous below spring line of pipe. Install tracer wire with new service, fire and main lines. Where there is existing tracer wire, connect new tracer wire to existing tracer wire. If splices are required, make watertight connection.
- F. Place restraining devices according to manufacturers' recommendations or concrete thrust blocks at any change of pipe direction and fittings. Use mechanical joint restraint devices on fittings for live tie-ins when there is not adequate time for concrete thrust blocks to cure.
- G. Backfill trench in accordance with Section 31 23 16.13.

3.3 INSTALLATION – VALVES AND HYDRANTS

- A. Set valves on solid bearing. Center and plumb valve box over valve. Set box cover flush with finished grade.
- B. Set hydrants on solid bearing and plumb. Locate pumper nozzle perpendicular to and facing roadway or traveled way. Install valve next to fire hydrant and place valve box to grade. Provide drainage rock around fire hydrant.

3.4 INSTALLATION – SERVICES

- A. Coordinate service connection with Owner.
- B. Install new service line and fittings as needed to connect to from existing water meter to building water service line.

3.5 WATER PIPING PRESSURE TEST

- A. Pressure test new piping as follows:
 - 1. Test water piping at pressure rating of pipe.
 - 2. Fill pipe with water and place under slight pressure for at least 48 hours.
 - 3. Bring pipe pressure to test pressure and maintain for 4 hours minimum.
 - 4. Provide accurate means for measuring quantity of water needed to maintain test pressure on pipe for test period.
 - 5. If volume of water added to pipe is 10 gallons per inch of pipe diameter per mile of pipe per 24 hours or less, pipe passes test.
 - 6. If pipe does not pass test, find source of leakage, repair or replace, and retest. Repeat until pipe passes test.

3.6 WATER PIPING DISINFECTION

- A. After completing pressure test, flush pipe to remove dirt or other foreign objects.
- B. Add liquid chlorine or liquid calcium hypochlorite to pipe to obtain 50 ppm concentration of chlorine. Maintain 25 ppm chlorine residual at end of 24 hours. Disinfect piping in accordance with Utah State Rules for Public Drinking Water Systems and AWWA C651.
- C. Flush chlorinated water from pipe. Dispose of chlorinated water in accordance with Utah Water Quality Board rules in accordance with of Utah Administrative Code R317.
- D. After flushing chlorinated water from piping, sample and complete bacteriological testing.

1. Frequency: For every 1,200 feet of new main piping, take two consecutive samples 24 hours apart. Use sterile sample bottles furnished by testing laboratory.
 2. Acceptance: Absence of coliform bacteria in two consecutive samples taken 24 hours apart.
 3. If necessary re-chlorinate until satisfactory bacteriological tests are obtained.
 4. Do not put piping into service until test results are satisfactory.
- E. If service lines are not disinfected with main line, flush service lines with chlorinated water prior to connecting and putting into use.

3.7 PROTECTION

- A. Protect pipe and accessories from damage or displacement.
- B. Prevent mud, silt, gravel, and other foreign materials from entering pipe and keep off joint surfaces.
- C. Install plug in pipe end when pipe laying is not in progress.

END OF SECTION

SECTION 33 31 15
SITE SANITARY SEWERAGE UTILITY

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sanitary sewer piping, fittings, accessories and bedding.
 - 2. Cleaning.
- B. Related Requirements:
 - 1. Section 31 23 16.13 – Trenching.

1.2 REFERENCE STANDARDS

- A. ASTM International (ASTM):
 - 1. ASTM D1784 - Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
 - 2. ASTM D2321 - Underground Installation of Flexible Thermoplastic Sewer Pipe.
 - 3. ASTM D2412 - External Loading Properties of Plastic Pipe by Parallel - Plate Loading.
 - 4. ASTM D3034 - Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
 - 5. ASTM F477 - Elastomeric Seals (Gaskets) for joining plastic pipe.

1.3 DEFINITIONS

- A. Bedding: Fill placed under, beside and directly over pipe to 12 inches above top of pipe, prior to subsequent backfill operations.

1.4 SUBMITTALS

- A. Product Data: Provide data indicating pipe, fittings, warning tape, and accessories.

1.5 REGULATORY REQUIREMENTS

- A. Conform to requirements of Utah Department of Environmental Quality.
- B. Install sewer pipes with minimum of 10 feet horizontal or 18 inches vertical separation from water pipes. Measure distance from outside edge of pipe to outside edge of pipe. Install sewer pipes below water pipes.

PART 2 PRODUCTS

2.1 SEWER PIPE MATERIALS

- A. Main collection lines and service lines: Polyvinyl Chloride (PVC) Gravity Sewer Pipe:
 - 1. ASTM D3034 for diameters from 4 inches to 15 inches.
 - 2. PVC material conforming to ASTM D1784.
 - 3. Minimum pipe stiffness of 46 psi according to ASTM D2412.
 - 4. SDR of 35.
- B. Pipe Joints: Bell and spigot style with elastomeric gaskets conforming to ASTM F477.
- C. Fittings: Same material as pipe molded or formed to suite pipe size and end design, in required tee, bends, elbows, cleanouts, reducers, traps and other configurations required.
- D. Plastic Warning Tape: Bright colored green, continuously printed SANITARY SEWER PIPE BELOW, minimum 6 inches wide by 4 mil thick, manufactured for direct burial.

2.2 BEDDING MATERIALS

- A. Bedding:
 - 1. Excavated materials consisting of earth, loam, sandy clay, sand, and gravel which are free from clods of earth, rocks larger than 3/4 inch, frozen material, organic material and debris.
 - 2. If excavated material is unsuitable for bedding, import bedding consisting of pitrun gravel, sand, or other suitable material with 3/4 inch maximum size gradation.

PART 3 EXECUTION

3.1 PREPARATION

- A. Excavate trench in accordance with Section 31 23 16.13.
- B. Verify that trench is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.
- C. Hand trim excavations to required elevations. Correct over excavation with fine aggregate.
- D. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.
- E. Remove water from trench.

3.2 INSTALLATION

- A. Install pipe, fittings, and accessories in accordance with ASTM D2321 and manufacturer's instructions. Install pipe in straight line. Seal joints watertight.
- B. Lay pipe at slope indicated on Drawings or not less than 2.0 percent for service lines.
- C. Install service lines as indicated on Drawings.
- D. Place bedding at sides and over top of pipe in lifts not exceeding 6 inches compacted depth. Place bedding to minimum compacted thickness of 12 inches above top of pipe.
- E. Compact bedding to 96 percent of maximum laboratory density. Maintain optimum moisture content to attain required density.
- F. Backfill trench in accordance with Section 31 23 16.13.
- G. Place warning tape 2 feet above top of pipe.
- H. Clean sewer pipe.

3.3 TOLERANCES

- A. Pipe Slope: Plus or minus 0.04 feet, except level or reverse gradients not permitted.

3.4 PROTECTION

- A. Protect pipe from damage or displacement.
- B. Prevent mud, silt, gravel and other foreign materials from entering pipe and keep off joint surfaces.
- C. Install plug in pipe end when pipe laying is not in progress.

END OF SECTION