COLLEGE OF WESTERN IDAHO
INVITATION TO BID (ITB)

UTILITY & INFRASTRUCTURE PROJECT IN SUPPORT OF MODULAR BUILDINGS

ITB 01-2019

BIDS DUE: APRIL 25, 2019 AT 5:00 PM MT

Mail sealed bids to:
College of Western Idaho
Attn: ITB Utility & Infrastructure Project in Support of Modular Buildings
Sue Heathman, Senior Analyst, RFP/Contracts
MS 1000, P.O. Box 3010
Nampa, ID 83653

FED Ex, UPS or Hand Deliver to Physical Address:
College of Western Idaho
Attn: ITB Utility & Infrastructure Project in Support of Modular Buildings
Sue Heathman, Senior Analyst, RFP/Contracts
6056 Birch Lane, Suite 200
Nampa, ID 83687

BIDDERS MUST REQUEST CIVIL CONSTRUCTION PLANS FROM CWI – Due to file size upload limitations of CWI's website, Civil Construction Plans will be emailed to potential bidders via the We Transfer website. To request these plans, please email your request to Sue Heathman at sueheathman@cwidaho.cc placing in the subject line "ITB 01-2019 Utility & Infrastructure Project – Request for Civil Construction Plans".

CONTENTS

INVITATION TO BID
Utility & Infrastructure Project in Support of Modular Buildings

1. INTRODUCTION AND PURPOSE

The College of Western Idaho ("CWI" or "College") is a public, open-access and comprehensive community college, providing higher education programs to residents of Western Idaho, with campuses currently located in Nampa and Boise. CWI is committed to providing affordable access to quality teaching and learning. CWI offers a full range of academic and career-technical courses leading to an Associate of Arts or Science degree, transfer degrees, career-technical degrees, continuing education, and certificates. It also offers basic academic skills to help prepare for a GED, dual credit for high school students, and fast-track career training for working professionals.

The purpose of this Invitation to Bid ("ITB") is to request bids from qualified licensed public works contractors for procurement, installation and all other work associated with the specifications provided below. CWI is in need of additional office space at our Nampa Campus to facilitate growth. This Utility and Infrastructure project will facilitate the installation of three (3) modular buildings that will be placed northeast of the Nampa Academic Building located at 5500 East Opportunity Drive in Nampa, Idaho. These three modular buildings will be 60ft x 60ft and will be placed on foundations, provided by the Modular building manufacturer. Work for placement of these structures will include, but is not limited to, site work, concrete, underground utility connections for power, sewer, water and gas. Electrical transformers and associated equipment will be needed, and installation of paving, concrete sidewalks and landscaping will also be required. See Construction Plans and Specification approved by the State of Idaho Division of Building Safety on 2-19-2019. The College intends to have construction work completed by July 15, 2019, in order to allow delivery and installation of the modular buildings to be complete by July 30, 2019.

2. INSTRUCTIONS TO CONTRACTORS

2.1 SUBMITTAL DIRECTIONS

All Bids should be delivered with the notation "ITB 01-2019 Utility & Infrastructure Project in Support of Modular Buildings" and should be directed to Sue Heathman, at sueheathman@cwidaho.cc. Contractor's will receive a response email that bid was received. If this response is not received by Contractor, call **(208) 562-3439**. **Three (3) sets in hard copy format, along with one (1) electronic copy on a USB flash Drive** of the bid are required. Both electronic version and hard copies must be submitted on or before **April 25, 2019 at 5:00 PM MT** to either of the addresses shown below:

Mail to:
College of Western Idaho
Attn: ITB Utility & Infrastructure Project in Support of Modular Buildings
Sue Heathman, Senior Analyst, RFP/Contracts
MS 1000, P.O. Box 3010
Nampa, ID 83653

Fed Ex, UPS or Hand deliver to Physical Address:
College of Western Idaho
Attn: ITB Utility & Infrastructure Project in Support of Modular Buildings
Sue Heathman, Senior Analyst, RFP/Contracts
6056 Birch Lane, Suite 200
Nampa, ID 83687

Contractors are responsible for ensuring that bids are received at CWI by the due date and time as stated above, whether electronic, mailed, parcel or hand delivered. Bids must be in a sealed package.

Bids received after the designated time and date indicated will not be considered for evaluation.

2.2 SCHEDULE OF EVENTS

Event	Date and Time[1]
Invitation to Bid Issued and Advertised	April 11, 2019 and April 18, 2019
Walk-Through	April 19, 2019 – 3:00 PM MT
Question Period Ends	April 23, 2019 - 5:00 PM MT
Bids Due	April 25, 2019 - 5:00 PM MT
Bids Open Date	April 26, 2019 - 9:00 AM MT
Evaluation Period	April 26, 2019
Intent to Award	April 29, 2019
Tentative Commencement of Contract	April 30, 2019
	[1]The noted dates and times are tentative and subject to change.

2.3 CONTACT WITH COLLEGE PERSONNEL-QUESTIONS

All communications and questions by Contractor shall be made via the below named contact.

Contact Name: Sue Heathman, Senior Analyst, RFQ/Contracts

Address: MS 1000, P.O. Box 3010, Nampa, ID 83653

Email Address: sueheathman@cwidaho.cc

Please enter as the subject line of your email **"ITB 01-2019 Utility & Infrastructure Project in Support of Modular Buildings"**. If the question is in regards to the Construction Contract (Attachment 4), state the clause number and note what revisions if any are being requested. No revisions will be permitted once bids are submitted. All questions must be submitted by **April 23, 2019 at 5:00 PM MT**. If you do not intend to submit a question but would like to receive the question/answer document, please send an email and use the subject line **"ITB 01-2019 Utility & Infrastructure Project in Support of Modular Buildings".** Answers to questions will be posted on CWI web site under Purchasing Notices. No other communication of questions and answers will be made.

The College reserves the right to modify the Scope and Specifications of this ITB, as circumstances require. The ITB and all subsequent addenda may be found at the CWI website. Please check for updates/amendments at:

http://cwidaho.cc/info/procurement-division-contractspurchasing

2.4 BID OPENING

All bids received by the time and due date will be publicly opened by representatives of the Evaluation Committee on **April 26, 2019 at 9:00 AM MT** at the CWI Administration Building, 6056 Birch Lane, Suite 200, Nampa, Idaho. At the time of opening, only the names of the Contractors will be shared.

Upon receipt of bids, an evaluation committee will select a qualified contractor based on the lowest responsive bid that meets the specifications.

2.5 ERRORS IN BIDS

The College will not be liable for any errors in bids. Modifications to bids will not be accepted after the deadline.

2.6 WITHDRAWING BIDS

Contractors may withdraw a bids at any time prior to the deadline by submitting an email to **sueheathman@cwidaho.cc** sent by an authorized representative of the Contractor. After withdrawing a bid, the Contractor may submit another bid at any time prior to the bid due date.

2.7 LIMITATIONS

The College will not be obligated in any way by any Contractor's response to this ITB. The selection of a bid and the accompanying award of a contract are to be based on evaluation criteria established in this ITB and described in the Evaluation and Award Section. The selection is at the sole discretion of the College.

The issuance of this ITB does not constitute an assurance that any contract will actually be entered into by any parties and the College expressly reserves the right to:

- Request additional information and data from any or all Contractors.
- Supplement, amend, or otherwise modify the ITB or cancel this request with or without the substitution of another ITB.
- Disqualify any Contractor who fails to provide information or data requested herein or who provides inaccurate or misleading information or data.
- Disqualify any Contractor on the basis of any real or apparent conflict of interest.
- Disqualify any Contractor on the basis of past performance on other projects.
- The College shall have the sole discretion to select one or none of the Contractors to provide the services, or portions thereof, as described in this ITB.

2.8 PUBLIC RECORDS

Pursuant to Idaho Code section 74-101 et seq., information or documents received by CWI in bids or from the Contractor may be open to public inspection and copying unless exempt from disclosure. Contractors shall clearly designate individual documents as "exempt" on each page of such documents and shall indicate the basis for such exemption. CWI assumes no liability for disclosure of proprietary material submitted by Contractors. Contractor shall not label an entire document as a "trade secret," merely because a portion of that document is or may be a trade secret. If any exempt information becomes the subject of a public records or other such request for production, CWI will notify the Contractor and, upon the execution of an agreement to defend and indemnify CWI, will allow the Contractor to address the public records or other request on behalf of CWI in the appropriate forum.

2.9 BID FORMAT

Each official paper response should be bound separately in a simple, effective manner, and printed on standard 8½ x 11 inch paper clearly indicating the name, phone number, and email address of the Contractor contact(s) responsible for the bid, along with the company name, address, phone number, fax number, and web address.

All Contractors responding to this ITB are responsible for all costs associated with the preparing of their bids, answering all questions, and providing the College with requested information. CWI is under no obligation to incur or reimburse any Contractor for any bid costs.

2.10 ELIGIBILITY FOR AWARD

In order for a Contractor to be eligible for an awarded contract, the bid must be responsive to this ITB and the evaluators must be able to determine that the Contractor is responsible and has the resources and capacity to perform the resulting contract satisfactorily.

Eligible Contractors, at a minimum, must meet the following requirements:

- Have adequate financial resources, or the ability to obtain such resources as required during the performance of any resulting contract.
- Be able to comply with the required performance schedule, taking into consideration all existing business commitments.
- Have a satisfactory record of past performance.
- Have necessary personnel and management capable of performing requirements on a resulting contract.
- Be qualified as an established Contractor regularly engaged in the type of business necessary to fulfill the contract requirements.
- Be otherwise qualified and eligible to receive an award under applicable laws and regulations.
- Have a Public Works Contractors License

3. BID EVALUATION AND AWARD

3.1 EVALUATION OF BIDS

An Evaluation Committee will carefully review all bids submitted to determine which bid provides all requirements and meets specifications. Checklist of Requirements found in **Attachment 3 Checklist of Requirements**.

3.2 UNRESPONSIVE BIDS

Bids not meeting the following requirements may be deemed unresponsive and may not be afforded consideration:

- A submitted bid may be deemed unresponsive if the Contractor does not specifically offer all services as specified in the ITB.
- The bid must acknowledge that all services, terms, and conditions specified in this bid are included in the quoted price.
- The bid must state that this ITB and the bid submitted by the Contractor in response to this ITB will be made a material part of any contract executed.

3.3 CONTRACT AWARD

Award will be made to the responsive Contractor with the lowest total cost and meets the ITB specifications.

This ITB does not commit to awarding a contract, pay any costs incurred in the preparation of a bid, or contract for the services described herein.

4. SPECIFICATIONS AND OTHER REQUIREMENTS

4.1 SPECIFICATIONS

Specifications for the project are found in **Attachment 2**.

4.2 OTHER REQUIREMENTS

Other ITB requirements are as follows:

4.2.1 COST REVISE

Provide your fully burdened Total Cost on **Attachment 1 Bid Schedule** meeting all the specifications listed in **Attachment 2 Specifications**.

4.2.2 PRODUCT SUBSTITUTIONS

During the term of any contract resulting from this solicitation, the Contractor is not authorized to substitute any item for that product identified in the solicitation without prior written consent of the college representative whose name appears on the front of this solicitation, or their designee.

4.2.3 INSTALLATION, SETUP, AND ACCEPTANCE

The Contractor will provide CWI prices for all work as outlined in Attachment 2 which includes, but is not limited to, excavation, utility trenching and installation of water, sewer, gas, electrical and data. Work will also include installation of concrete sidewalks, curbing and asphalt as outlined in Attachment 2.

All work shall comply with the Idaho Division of Building Safety's standards; including all permits, approvals of plans, and inspections.

Contractor will arrange and pay for permitting and inspections pertaining to the project. All work shall meet Idaho state codes.

Acceptance will occur after proof of all required testing, inspections, and final inspection by CWI personnel to ensure the above has been accomplished.

4.3 WARRANTY, SERVICE AND SUPPORT, MAINTENANCE, ETC.

The Contractor will provide full warranty for defects in materials and workmanship on all aspects of the utility and infrastructure for the modular buildings for the first twelve (12) months from date of acceptance. All appliances, supplies, etc. will come with manufacturers' standard warranties.

4.5 SUBCONTRACTORS

Unless otherwise allowed by CWI in the Contract, the Contractor shall not, without written approval from the CWI, enter into any subcontract relating to the performance of the Contract or any part thereof. Approval by CWI of a Contractor's request to subcontract, acceptance of subcontracted work, or payment for subcontracted work by CWI, shall not in any way relieve the Contractor of any responsibility under the Contract. The Contractor shall be liable for all damages to CWI caused by negligent performance or non-performance of work under the Contract by the Contractor's subcontractor. Subcontractor(s) must maintain the same types and levels of insurance as that required of the Contractor under the Contract; unless the Contractor provides proof to the CWI's satisfaction that the subcontractor(s) are fully covered under the Contractor's insurance, or, except as otherwise authorized by CWI.

4.6 RECORDS MAINTENANCE

Contractor shall maintain or supervise the maintenance of all records necessary to properly account for all payments made to the Contractor pursuant to the Contract. These records shall be retained by the Contractor for at least three (3) years after the Contract terminates, or until all audits initiated within the three (3) years have been completed, whichever is later.

4.7 AUDIT RIGHTS

The Contractor agrees to allow CWI personnel access to all the records relating to this Contract, for audit, inspection, and monitoring of services or performance. Such access will be during normal business hours or by appointment.

4.8 TITLE

Successful Contractor warrants that all equipment, materials, supplies, product and other items furnished by Contractor, shall be free and clear of any and all liens, restrictions, reservations, security interests, or encumbrances and, further, Contractor warrants it is transferring full, clear, and unrestricted titles to the same.

4.9 INSURANCE AND BONDING

The Contractor and any sub-contractors shall maintain in full force and effect insurance as required by Article 21 of the Construction Contract found in Attachment 4 of this document. Bond documentation will also be required as found in Article 24 of the Construction Contract.

SIGNATURE BLOCK

Please return this page with each copy of your submittal.

The undersigned, an authorized agent of his/her company, hereby certifies:

( ) They have reviewed and understand all terms, conditions, and specifications herein stated and can meet such terms, conditions, and specifications unless expressly noted in the bid.

( ) Contractor is qualified to perform work and services as included.

( ) The pricing contained in this submittal is valid six (6) months from submission.

_____

Company Name

_____

Address - City, State, Zip Code

_____

Federal Tax ID Number

_____

Printed Name of Person Submitting Bid Title

_____

Authorized Signature

_____

Phone Number Fax Number

_____

Date of Bid Submission

ATTACHMENT 1 BID SCHEDULE

UTILITY & INFRASTRUCTURE PROJECT IN SUPPORT OF

MODULAR BUILDINGS FOR THE COLLEGE OF WESTERN IDAHO, NAMPA CAMPUS

BID AMOUNT*	COMMENTS

*Your bid amount (aka Total Cost) must be fully burdened to include, all materials, transportation, installation requirements, labor, warranties, permit fees, and any other costs associated with meeting the specifications of this bid.

Construction activities have will have a 90 calendar day schedule for time of a signed contract

Company Name of Bidder: _____

Contact Name/Phone: _____

Contact Email: _____

ATTACHMENT 2 SPECIFICATIONS

GENERAL:

This utility and infrastructure project will facilitate the placement of three (3) modular buildings. Work for placement of these structures will include, but is not limited to, site work, concrete, underground utility connections for power, sewer, water and gas. Electrical transformers and associated equipment will be needed, and installation of paving, concrete sidewalks and landscaping will also be required. See attached Construction Plans and Specification approved by the State of Idaho Division of Building Safety on 2-19-2019, and Civil Construction Plans dated January 2019.

BIDDERS MUST REQUEST CIVIL CONSTRUCTION PLANS FROM CWI – Due to file size upload limitations of CWI's website, the Civil Construction Plans will be emailed to potential bidders via the We Transfer website. To request these plans, please email your request to Sue Heathman at sueheathman@cwidaho.cc placing in the subject line "ITB 01-2019 Utility & Infrastructure Project – Request for Civil Construction Plans".

College of Western Idaho Nampa Portable Buildings

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Section 02221 – Excavation and Embankment

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DIVISION 3- CONCRETE

Section 03200 – Concrete Reinforcement

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Section 260526 – Grounding and Bonding for Electrical Systems

Section 260529 – Hangers and Supports for Electrical Systems

SECTION 01000

SPECIAL CONDITIONS

PART 1 - SITE CONDITIONS

1.1 SITE INVESTIGATION AND REPRESENTATION

A. This document was prepared based on a site inspection of the included pavement areas and existing landscape.

1.2 UTILITIES AND PIPELINES

A. Utilities within the work area are shown in an approximate location only and represent data provided by others. The Contractor is responsible, prior to construction to coordinate with utility companies to accurately locate utilities in and around construction. Contractor shall assume full responsibility for the location and protection of existing utilities throughout the course of construction. Should any damage be made to existing utilities during construction, the Contractor shall notify the Owner Immediately in order for repairs to be made. In the event that the Contractor identifies underground utilities which were not identified on the plans, the Contractor shall notify the engineer. The Contractor shall promptly continue with construction, protecting the utility, unless otherwise instructed by the engineer. If the Engineer finds that such encounters cause an increase, or decrease in the cost of, or in the time required for performing the work, the Engineer shall determine the amount of adjustment in cost and time considered reasonable and make the final decision on all Change Orders to the Contract regarding any adjustment in cost or time for completion.

1.3 TEMPORARY FACILITIES

All temporary facilities, including telephone, power, construction water, and sanitary facilities for employees, shall be provided by the Contractor at no added cost to the project.

1.4 PROJECT COORDINATION

Coordination: The Contractor shall coordinate his construction operation with the College of Western Idaho Nampa Campus Portable Buildings Designee, and Project Engineer. A Preconstruction Conference will be held at the time, location, and date determined by the College of Western Idaho. In attendance will be the Site Contractor, Sub-Contractor(s), College of Western Idaho and Project Manager, Agency Representative and the Engineer.

The Engineer will provide minutes of the Preconstruction Conference to all concerned parties.

The College of Western Idaho will present to the Contractor the Notice to Proceed, Contract Documents, forms and Preconstruction Conference format.

The Preconstruction Conference will be conducted by the College of Western Idaho.

1.5 CONSTRUCTION SEQUENCING

The Site Contractor is advised that this project includes all site work as shown on the plans and described in the specifications.

1.6 IDAHO STANDARDS FOR PUBLIC WORKS CONSTRUCTION (ISPWC)

Construction materials, workmanship and equipment, including but not limited to, trench excavation, backfill and pipe bedding materials, compaction, shall conform to the applicable sections of the most current edition of the Idaho Standards for Public Works Construction (ISPWC), or as modified by these specifications and the plans. Any reference to Measurement and/or Payment in the attached ISPWC specifications shall be ignored for this contract.

1.7 COMPACTION AND MATERIALS TESTING

The Owner shall pay the cost of testing as specified herein. The Contractor shall meet the minimum requirements for compaction as stated below.

The mix design of the asphalt to be used for asphalt paving, patching, and overlays shall be furnished to the Engineer for review and approval prior to paving operations. The engineer or inspector shall be notified 48 hours in advance of asphalt paving, patching and overlays to schedule testing and inspection throughout patching operations.

Compaction testing of all asphalt paving, repairs and overlays will be required on the top of the base course, prior to placement of asphalt pavement. All base course shall be compacted to within 95 percent of laboratory determined maximum density, as determined by AASHTO T-99. All asphalt pavement shall be compacted to within 95 percent of laboratory determined maximum density, as stated in the approved asphalt mix design.

In order to achieve uniform asphalt densities throughout this project, the Contractor shall use a nuclear densometer at the onset of paving to establish a proper asphalt rolling pattern. The Contractor shall establish the roller pattern and not deviate from this pattern, unless a new roller pattern is established by similar means, or approved by the College of Western Idaho.

1.8 SUBMITTALS

The Contractor shall furnish to the College of Western Idaho and the engineer all product data, such as manufacturer's brochures, instructions, manuals, product certifications, and warranties for materials and equipment to be furnished on this project, including paving fabric, tack coat materials, asphalt mix designs, paint. Contractor shall be prepared at the preconstruction conference to identify proposed products.

1.9 PROJECT CLOSEOUT

The Contractor shall remove all construction related equipment and materials from the project site upon successful completion of the work. The Site Contractor, the College of Western Idaho and the Engineer shall make a final project inspection, at which time all remaining punch list work to be completed prior to project closeout shall be identified by the engineer and completed by the Contractor. The project shall be closed out and 1 year period of correction started on the date of successful completion of the punch list items and the issuance of all project closeout paperwork provided to the Contractor at the preconstruction conference.

End of Section 01000

SECTION 01010

SUMMARY OF WORK

PART 1 - SUMMARY OF WORK

1.1 RELATED DOCUMENTS

A. The Contractor acknowledges satisfaction as to the nature and location of the work, the Drawings and General Conditions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, applying to this Section.

1.2 PROJECT DESCRIPTION

A. Project Name and Location:

CWI Nampa Campus Portable Buildings
College of Western Idaho (CWI)
Canyon County, Nampa, Idaho.

B. The Project consists of all of the following:

Without force of effect on the requirements of the Contract Documents, the description of the work of the Contract can be summarized as follows:

1.3 BASE PROPOSAL: The Base Proposal consists of demolition of a portion of the existing parking lot to facilitate the proposed improvements, construction of curb, gutter and concrete sidewalk, asphalt parking lot paving and re-striping, site grading and pad preparation for the placement of the three modular buildings. The work shall include all elements as shown on the plans and described in the specifications, including:

A. Sawcut existing asphalt as shown on the plans. Remove and dispose of all asphalt as shown on plans.

B. Remove and dispose of existing concrete as shown on plans.

C. Place structural fill and base course materials per standard pavement section detail.

D. Place concrete curb and gutter to the limits shown on the plans.

E. Place asphalt pavement to the limits shown on the plans and matching adjacent elevations.

F. Parking lot striping as shown on plans.

G. Modular building pad preparation as indicated on the plan set.

H. Site utility improvements to provide sewer and water service to each of the proposed modular buildings as indicated on the plan set.

I. Site electrical improvements to provide electrical service to each of the proposed modular buildings as indicated in the plan set.

J. Place concrete sidewalk to the limits shown on the plans

K. Site landscaping as indicated in the plan set.

L. Site cleanup and removal of all equipment, excess, and waste materials.

End of Section 01010

SECTION 01035

MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and other Division 1 Specifications Sections apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract Modifications.

B. Related Sections: The following sections contain requirements that relate to this section.

1. Division 1, Section 1300 - Submittals, for requirements for the Contractor's Construction Schedule.

1.3 CHANGE ORDER PROPOSAL REQUESTS

A. Owner initiated Proposal Requests: Proposed changes in the Work that will require adjustment to the Contract Sum, or Contract Time will be issued by the Engineer with a detailed description of the proposed change and supplemental or revised drawings and specifications, if necessary.

1. Proposal requests issued by the Engineer are for information only. Do not consider them as instructions either to stop Work in progress, or to execute the proposed change.

2. Unless otherwise indicated in the proposal request, within 5 days of receipt of the proposal request, submit to the Engineer for the Owner's review an estimate of cost necessary to execute the proposed change.

    a. 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.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.

3. Contractor Initiated Change Order Proposal Requests: 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 Engineer.

    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 the Contract Time.

b. Include a list of quantities and 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 applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

1.4 CONSTRUCTION CHANGE DIRECTIVE

A. When the Owner and Contractor are not in total agreement on the terms of the Change Order Proposal Request, the Engineer may issue a Construction Change Directive, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.

1. 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.

2. Documentation: Maintain detailed records on a time and materials basis of Work required by the Construction Change Directive.

a. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

B. Construction Change Directives may be used as a method of gaining quicker approval of changes not exceeding $10,000.00. The Engineer may issue a Construction Change Directive per Article 16, Changes on the Work, of the Fixed Price Construction Contract, instructing the Contractor to proceed with the Work based upon the agreed price which will be included in a future Change Order.

1.5 CHANGE ORDER PROCEDURES

A. Upon the Owner's approval of a Change Order Proposal Request, the Engineer will issue a Change Order for signature of the Owner and Contractor.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

End of Section 01035

SECTION 013100

PROJECT MANAGEMENT AND COORDINATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on project including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.
4. Requests for Interpretation (RFIs).

1.3 DEFENITIONS

A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.4 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other Contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.

B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate Contractors if coordination of their Work is required.

C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other Contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Pre-installation conferences.
7. Project closeout activities.
8. Startup and adjustment of systems.
9. Project closeout activities.

D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1.5 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of fabricated products and materials.

1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:

   a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
   b. Indicate required installation sequences.
   c. Indicate dimensions shown on the Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Engineer for resolution of such conflicts. . Minor dimension changes and difficult installations will not be considered changes to the Contract.

2. Sheet Size: At least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
3. Number of Copies: Submit five opaque copies of each submittal. Engineer will return one copy. Mark up and retain one returned copy as a Project Record Drawing.

4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

B. Key Personnel Names: Within 7 days of starting construction operations, submit a list of key personnel assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1.6 ADMINISTRATIVE AND SUPERVISORY PERSONNEL

A. General: In addition to Project superintendent, provide other administrative and supervisory personnel as required for proper performance of the Work.

1.7 PROJECT MEETINGS

A. General: Meetings and conferences will be held at a location convenient to the Project sites.

B. Preconstruction Conference: Owner will schedule a preconstruction conference before the start of construction, at a time convenient to all parties. The conference will be held at Project site or another convenient location. Owner will conduct the meeting.

1. Attendees: Authorized representatives of Owner, Engineer, and their consultants; Contractor and its superintendent; major Sub-Contractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Discuss items of significance that could affect progress.
3. Minutes: Engineer will record and distribute meeting minutes.

C. Progress Meetings: Engineer will conduct progress meetings at two week intervals. Dates of meetings will be coordinated with preparation of payment requests on a monthly basis.

1. Attendees: In addition to representatives of Owner and Engineer, and their consultants, and Contractor and its superintendent, each Sub-Contractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.

    a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction 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.

        1) Review schedule for next period.

    b. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.
    c. Review present and future needs of each entity present.

3. Minutes: Engineer will record and distribute the meeting minutes.

D. Coordination Meetings: Contractor shall conduct Project coordination meetings as necessary. Project coordination meetings are in addition to specific meetings held for other purposes, such as progress meetings and pre-installation conferences.

1.8 REQUESTS FOR INTERPRETATION (RFIs)

A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, prepare and submit an RFI on a form acceptable to Owner and Engineer.

1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of Sub-Contractors.

B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:

1. Project name.
2. Date.
3. Name of Contractor.
4. Name of Engineer.
5. RFI number, numbered sequentially.
6. Specification Section number and title and related paragraphs, as appropriate.
7. Drawing number and detail references, as appropriate.
8. Field dimensions and conditions, as appropriate.
9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
10. Contractor's signature.
11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.

    a. Supplementary drawings prepared by Contractor shall include dimensions, thicknesses, structural grid references, and details of affected materials, assemblies, and attachments.

C. Engineer's Action: Engineer will review each RFI, determine action required, and return it. Allow 15 calendar days for Engineer's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.

1. The following RFIs will be returned without action:

    a. Requests for approval of submittals.
    b. Requests for approval of substitutions.
    c. Requests for coordination information already indicated in the Contract Documents.
    d. Requests for adjustments in the Contract Time or the Contract Sum.
    e. Requests for interpretation of Engineer’s actions on submittals.
    f. Incomplete RFIs or RFIs with numerous errors

    .
2. Engineer's action may include a request for additional information, in which case Engineer's time for response will start again.
3. Engineer's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Modification Procedures."

    a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Engineer in writing within 10 calendar days of receipt of the RFI response.

D. On receipt of Engineer's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Engineer within 3 days if Contractor disagrees with response.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

End of Section 013100

SECTION 013200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
   1. Contractor's Construction Schedule.
   2. Daily construction reports.
   3. Field condition reports.
   4. Special reports.

1.3 SUBMITTALS

A. Contractor's Construction Schedule: Submit two opaque copies of initial schedule, large enough to show entire schedule for entire construction period.

B. Daily Construction Reports: Submit two copies at monthly intervals unless interim submittals are requested by Engineer.

C. Field Condition Reports: Submit two copies at time of discovery of differing conditions.

D. Special Reports: Submit two copies at time of unusual event.

1.4 COORDINATION

A. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, progress reports, payment requests, and other required schedules and reports.

   1. Secure time commitments for performing critical elements of the Work from parties involved.
   2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 – PRODUCTS

2.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Procedures: In addition to the following, comply with all requirements of Article 10 of the Fixed Price Construction Contract between Owner and Contractor.

B. Time Frame: Extend schedule from date established for the Notice to Proceed to date of Substantial Final Completion.

1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order.

C. Activities: Comply with the following:

1. Activity Duration: Define activities so no activity is longer than 30 days, unless specifically allowed by Engineer.
2. Procurement Activities: Include procurement process activities for the following long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
3. Submittal Review Time: Include review and re-submittal times indicated in Division 01 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
4. Startup and Testing Time: Include days for startup and testing.
5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Engineer's administrative procedures necessary for certification of Substantial Completion.

D. Milestones: Include milestones indicated in the Contract Documents in schedule including, but not limited to, the Notice to Proceed, Substantial Completion, and Final Completion. Schedules for required governing agency approvals shall be indicated.

E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragments to demonstrate the effect of the proposed change on the overall project schedule.

F. Milestone Schedule: Prepare milestone schedule in accordance with other provisions of this Paragraph 2.1 and the following:

1. Milestone schedule shall indicate construction activities in a "bar chart" or other form acceptable to the Owner and Engineer. Construction activities shall indicate specific areas and categories of work and shall indicate start and completion dates for each activity. Milestones as indicated in Paragraph 2.2.D. above shall be indicated.

2.2 REPORTS

A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:

1. List of subcontractors at Project site.
2. Approximate count of personnel at Project site.
3. Equipment at Project site.
4. Material deliveries.
5. High and low temperatures and general weather conditions.
6. Accidents.
7. Meetings and significant decisions.
8. Unusual events (refer to special reports).
9. Stoppages, delays, shortages, and losses.
10. Emergency procedures.
11. Orders and requests of authorities having jurisdiction.
12. Change Orders received and implemented.
13. Construction Change Directives received and implemented.
14. Partial Completions and occupancies.
15. Substantial Completions authorized.

B. Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.

2.2 SPECIAL REPORTS

A. General: Submit special reports directly to Owner within one day of an occurrence. Distribute copies of report to parties affected by the occurrence.

B. Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Contractor's personnel, evaluation of results or effects, and similar pertinent information. Advise Owner in advance when these events are known or predictable.

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Contractor's Construction Schedule Updating: Conform to the requirements of Article 10 of the Fixed Price Construction Contract between Owner and Contractor.

1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
3. As the Work progresses, indicate Actual Completion percentage for each activity.

B. Distribution: In addition to the requirements of Article 10 of the Fixed Price Construction Contract between Owner and Contractor, distribute copies of approved schedule to other parties identified by Contractor with a need-to-know schedule responsibility.

I. When revisions are made, distribute updated schedules to the same parties. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

End of Section 013200

SECTION 013300

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
   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 parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

      a. Engineer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Engineer's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

   1. Initial Review: Allow 7 calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Engineer will advise Contractor when a submittal being processed must be delayed for coordination.
   2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
   3. Re-submittal Review: Allow 7 calendar days for review of each re-submittal.

C. Identification: Place a pen anent label or title block on each submittal for identification.

   1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space on label or beside title block to record Contractor's review and approval markings and action taken by Engineer.
3. Include the following information on label for processing and recording action taken:
    a. Project name.
    b. Date.
    c. Name and address of Contractor.
    d. Name and address of Sub-Contractor
    e. Name and address of supplier.
    f. Name of manufacturer.
    g. Submittal number or other unique identifier, including revision identifier.

        1) Submittal number shall *use* Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., 06l000.01.A).

    h. Number and title of appropriate Specification Section.
    i. Drawing number and detail references, as appropriate.
    j. Location(s) where product is to be installed, as appropriate.
    k. Other necessary identification.

D. Deviations: Highlight, encircle or otherwise specifically identify deviations from the Contract Documents on submittals.

E. Additional Copies: Unless additional copies are required for final submittal, and unless Engineer observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.

1. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.

F. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Engineer will return submittals, without review, received from sources other than.

1. On all attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Engineer on previous submittals, and deviations from requirements in the Contract Documents, including minor variations and limitations. Include same label information as related submittal.

G. Re-submittals: Make re-submittals in same form and number of copies as initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in label or title block and clearly indicate extent of revision**.**

H. Distribution: Furnish copies of final submittals to manufacturers, Sub-Contractors, suppliers, fabricators and installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

L. Use for Construction: Use only final submittals with mark indicating final unrestricted release or final but restricted release action taken by Engineer.

PART 2 – PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

    a. Manufacturer's written recommendations.
    b. Manufacturer's product specifications.
    c. Manufacturer's installation instructions.
    d. Standard color charts.
    e. Manufacturer's catalog cuts.
    f. Notation of coordination requirements.

4. Submit Product Data before or concurrent with Samples.
5. Number of Copies: Submit five copies of Product Data, unless otherwise indicated. Engineer will return one copy. Mark up and retain returned copy as a Project Record Document.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data, unless submittals of Engineer’s CAD Drawings are otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:

    a. Dimensions.
    b. Identification of products.
    c. Fabrication and installation drawings.
    d. Roughing-in and setting diagrams.
    e. Notation of coordination requirements.

f. Notation of dimensions established by field measurement.
g. Relationship to adjoining construction clearly indicated.

2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
3. Number of Copies: Submit five opaque copies of each submittal. Engineer will return one copy to be marked up as a Project Record Drawings.

D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
2. Identification: Attach label on unexposed side of Samples that includes the following:

a. Generic description of Sample.
b. Product name and name of manufacturer.
c. Sample source.
d. Number and title of appropriate Specification Section.

E. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation".

F. Application for Payment: Comply with requirements of Fixed Price Construction Contract between Owner and Contractor.

G. Schedule of Values: Comply with requirements of Fixed Price Construction Contract between Owner and Contractor.

I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.
2. Number and title of related Specification Section(s) covered by subcontract.
3. Drawing number and detail references, as appropriate, covered by subcontract.
4. Number of Copies: Submit three copies of Sub-Contractor list.
5. Sub-Contractor list shall be included in Project Record Documents.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Engineer will not return copies.

B. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."

C. Contractor's Construction Schedule: Comply with requirements specified m Division 01 Section "Construction Progress Documentation."

D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of Engineers and owners, and other information specified.

E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.

L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:

I. Name of evaluation organization.
2. Date of evaluation.
3. Time period when report is in effect.
4. Product and manufacturers' names.
5. Description of product.
6. Test procedures and results.
7. Limitations of use.

M. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."

N. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation or erection.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

O. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

P. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

Q. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Engineer.

1. Engineer will not review submittals that include MSDSs and will return the entire submittal for re-submittal.

PART 3 – EXECUTION

3.1 CONTRACTOR'S REVIEW

A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Engineer

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ENGINEER'S/ACTION

A. General: Engineer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Engineer will review each submittal, make marks to indicate corrections or modifications required, and return copies. Engineer will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:

1. Final Unrestricted Release: Where submittals are marked "Approved," that part of the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents.
2. Final-But-Restricted Release: When submittals are marked "Approved as Noted," that part of the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents; Final acceptance will depend on that compliance.
3. Returned for Re-submittal: When submittal is marked "Not Approved, 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 "Not Approved, Revise and Resubmit" to be used at the Project site, or elsewhere where Work is in progress.
    b. Submittals will be returned for re-submittal without review by the Engineer under any of the following conditions:

        l) The Contractor has not reviewed and signed the submittal.
        2) The submittal does not meet the requirements of the Contract Documents.

3) The submittal contains manufacturers and/or products not approved prior to bidding or subsequent to bidding under specified conditions.
4) The submittal contains error, omissions, or other deficiencies, which, in the opinion or the Engineer, make the submittal unacceptable for review.

C. Informational Submittals: Engineer will review each submittal and will not return it, or will return it if it does not comply with requirements. Engineer will forward each submittal to appropriate party.

D. Partial submittals are not acceptable, will be considered no responsive, and will be returned without review.

E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

End of Section 013300

SECTION 014000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for quality-control services.

B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by Design Professional.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

D. 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. Requirements in those Sections may also cover production of standard products.

2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Documents.

3. Requirements for Contractor to provide quality-control services required by Design Professional, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 RESPONSIBILITIES

A. Owner's Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, the Owner shall obtain the services of a certified materials testing laboratory to perform all sampling and testing of installed materials to assure that the requirements of this specification are met.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspecting they are engaged to perform.

2. Payment for these services will be made directly to the Testing Agency by Owner.

3. Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the contract Documents will be charged to Contractor.

B. Contractor's Responsibility:

1. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Unless otherwise indicated, provide quality-control services specified and those required by authorities having jurisdiction. Perform quality-control services required of Contractor by authorities having jurisdiction, whether specified or not.

2. The Contractor shall notify the Owner and Owner's testing company of the time in which tests are to be run, 24-hours prior to testing.

3. Retesting: The Contractor is responsible to reimburse the Owner for retesting where results of inspections, test, or other quality-control services prove workmanship is unsatisfactory and indicate noncompliance with contract documents required.

4. The cost of retesting is the contractor's responsibility where required tests performed on original construction indicated noncompliance with contract document requirements.

C. Associated Services: 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, the following:

1. Provide access to the Work.

2. Furnish incidental labor and facilities necessary to facilitate inspections and tests.

3. Take adequate quantities of representative samples of materials that require testing or assist the agency in taking samples.

4. Provide facilities for storage and curing of test samples.

5. Deliver samples to testing laboratories.

6. Provide the agency with a preliminary design mix proposed for use for materials mixed that require control by the testing agency.

7. Provide security and protection of samples and test equipment at the Project Site.

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with the Design Professional and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify the Design Professional and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. The testing agency shall pick up samples and take them to the testing laboratory.

3. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

4. The agency shall not perform any duties of the Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes. Comply with Contract Document requirements for Division 1 Section "Cutting and Patching."

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 01400

SECTION 014200

REFERENCES

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Engineer's action on Contractor's submittals, applications, and requests, "approved" is limited to Engineer's duties and responsibilities as stated in the Conditions of the Contract.

C. "Directed": A command or instruction by Engineer. Other terms including "requested," "authorized," "selected," "required," and “permitted" have the same meaning as "directed."

D. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

E. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": Operations at Project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": Furnish and install, complete and ready for the intended use.

I. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and mayor may not be identical with the description of the land on which Project is to be built.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless 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 to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Thomson Gale's "Encyclopedia of Associations" or in Columbia Books' "National Trade & Professional Associations of the U.S."

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

End of Section 014200

SECTION 015000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.3 USE CHARGES

A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum.

B. Water Service: Water from Owner's existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

C. Electric Power Service: Electric power from Owner's existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations.

1. Contractor shall supplement existing building electrical system with portable generators as required to pursue the Work. Such generators and fuel shall be provided at no additional cost to Owner.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with all applicable standards and regulations for temporary electric service.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 INSTALLATION (GENERAL)

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed.

3.2 TEMPORARY UTILITY INSTALLATION

A. Water Service: Use of Owner's existing water service facilities will be permitted, as long as facilities are cleaned and maintained in a condition acceptable to Owner. Refer to Paragraph 1.3.B. above.

1. Where installations below an outlet might be damaged by spillage or leakage, provide a drip pan of suitable size to minimize water damage. Drain accumulated water promptly from pans.

B. Electric Power Service: Use of Owner's existing electric power service will be permitted, as long as equipment is maintained in a condition acceptable to Owner. Refer to Paragraph 1.3.C. above.

C. Telephone Service: Provide temporary telephone service. Cellular telephone service is acceptable.

3.3 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.

B. Parking: Parking areas for construction personnel will not be provided by Owner.

C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

D. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel will not be provided by Owner.

1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

E. Elevator Use: Existing building elevators are not available for transport of construction materials or personnel.

F. Use of Stairs: Cover stairs with protective covering material so finishes will be undamaged at time of Substantial Completion.

G. Sanitary Facilities: Existing building toilet facilities are not available for construction personnel. Provide temporary toilets, wash facilities, and drinking water for use of construction personnel. Comply with authorities having jurisdiction for type, number, operation, and maintenance of fixtures and facilities. Locate temporary toilets where directed by Owner.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Provide measures to prevent discharge of airborne dust in accordance with requirements of applicable jurisdictions.

B. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

C. Temporary Protective's: Provide temporary Protective measures for protection of construction, existing, in progress and completed, from exposure, water from any source, foul weather, other construction operations, and similar activities.

D. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA241.

E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.

1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.

F. Storm Water Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.

G. Tree and plant Protection: Protect trees and root systems from damage, flooding, and erosion.

3.5 PROTECTION OF BUILDING OCCUPANTS AND VISITORS

A. Contractor shall provide all protections, barricades, warning devices, etc. as necessary to protect building occupants, visitors, and automobiles.

B. Contractor shall remove tools, cords, construction materials, debris, etc. from occupant and visitor accessible work areas at the end of each work period.

C. Contractor shall not leave work areas, tools, equipment, etc. unsupervised at any time.

D. Existing stair and elevator access and egress for building occupants and visitors shall remain open at all times during construction. Access and egress paths shall not be blocked or obstructed. Contractor shall erect barricades as required to safely direct building occupants and visitors to stair and elevator access and egress.

E. Contractor shall protect occupants, visitors, and automobiles from debris, dust, etc. during construction operations. Prevent dust migration to adjacent areas during concrete grinding.

3.6 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, or no later than Substantial Completion. 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 Contractor. Consider inserting specific removal requirements, as illustrated in first subparagraph below.
2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

End of Section 015000

SECTION 016000

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and product substitutions.

B. Contractor shall incorporate into the Work only those products specified, indicated as basis-of design products, those products approved in Addenda prior to bidding, or as approved after award of Contract under conditions set forth in Paragraphs 1.4 and 2.2 below.

1.3 DEFINITIONS

A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.
3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics.

1.4 SUBMITTALS

A. Substitution Requests: Submit three (3) copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified material or product cannot be provided.
b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. List of similar installations for completed projects with project names and addresses and names and addresses of Engineers and owners.
g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated
h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.
i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
j. Cost information, including a proposal of change, if any, in the Contract Sum.
k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Engineer's Action: If necessary, Engineer will request additional information or documentation for evaluation within 10 days of receipt of a request for substitution. Engineer will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 10 days of receipt of additional information or documentation, whichever is later.

a. Form of Acceptance: Change Order.

b. Use product specified if Engineer cannot make a decision on use of a proposed substitution within time allocated.

1.5 QUALITY ASSURANCE

A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project. Product selected shall be compatible with products previously selected, even if previously selected products were also options.

1. Contractor is responsible for providing products and construction methods compatible with all other products and construction methods of other contractors.

B. Basis-of-Design Products: Where a basis-of-design product is scheduled on the Drawings or is specified, the building and connecting construction are designed and/or detailed considering the\ specific characteristics of the basis-of-design product. When a substitution for a basis-of-design product is requested, the Contractor certifies the following when making such request:

1. The contractor shall pay for all changes to building design, including engineering design, detailing, structural supports, and construction costs caused by proposed substitution.
2. The proposed substitution has no adverse effect on other trades, the construction schedule, or specified warranty requirements.
3. Maintenance is available locally and service parts are readily obtainable for the proposed substitute.
4. Function, appearance, and quality of proposed substitution are equivalent or superior to specified item, in all respects.
5. All terms and conditions for the substituted product that are found in the Contract Documents apply to this proposed substitution.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

B. Delivery and Handling:

1. Schedule delivery to minimize long-term storage at Project 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 Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

C. Storage:

1. Store products to allow for inspection and measurement of quantity or counting of units.
2. Store materials in a manner that will not endanger Project structure.
3. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturers written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.
8. Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

1.7 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
3. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.

C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and' used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Engineer will make selection.
5. Where products are accompanied by the term "match sample," sample to be matched is Engineer's.
6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
7. Or Equal: Where products are specified by name and accompanied by the term "or equal" or "or approved equal" or "or approved," comply with provisions in Part 2 "Comparable Products" Article to obtain approval for use of an unnamed product.

B. Product Selection Procedures:

1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.
5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product, provide the specified product. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Products by other manufacturers are subject to approval prior to bidding.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Engineer's sample. Engineer's decision will be final on whether a proposed product matches.

a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.

10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, and textures" or a similar phrase, select a product that complies with other specified requirements.

    a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Engineer will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
    b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Engineer will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

A. Timing: Following award of Contract, Engineer will consider requests for substitution for products specified, or approved by addendum under any or all of the following conditions:

1. The specified product cannot be provided within the Contract Time. The request will not be considered if the product cannot be provided as a result of the Contractor's failure to pursue the Work promptly or coordinate activities properly.
2. The specified product cannot receive necessary approvals by governing authorities and the requested substitution con be approved.
3. A substantial advantage is offered the Owner, in terms of cost, time, energy conservation or other considerations of merit, after deducting offsetting responsibilities the Owner may be required to bear. Additional responsibilities for the Owner may include additional compensation to the Engineer for redesign and evaluation services, increased cost of other construction by the Owner or separate Contractors, and similar considerations.
4. The specified product cannot be provided in a manner that is compatible with other materials, or cannot be properly coordinated, warranted, or insured, and where the Contractor certifies that the substitution will overcome the deficiency.

B. By making a request for substitution, contractor warrants that:

1. Requested substitution does not require extensive revisions to the Contract Documents.
2. Requested substitution is consistent with the Contract Documents and will produce indicated results.
3. Substitution request is fully documented and properly submitted.
4. Requested substitution will not adversely affect Contractor's Construction Schedule.
5. Requested substitution has received necessary approvals of authorities having jurisdiction.
6. Requested substitution is compatible with other portions of the Work
7. Requested substitution has been coordinated with other portions of the Work.
8. Requested substitution provides specified warranty.

9. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

C. Provisions of Paragraph 1.5.B. above apply to substitutions requested under this Paragraph.

PART 3 – EXECUTION

Not Used

End of Section 016000

SECTION 017300

EXECUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1. General installation of products.
2. Progress cleaning.
3. Protection of installed construction.
4. Correction of the Work.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: Before beginning work, investigate and verify the existence and location of existing construction affecting the Work.

B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record all observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

   a. Description of the Work.
   b. List of detrimental conditions, including substrates.
   c. List of unacceptable installation tolerances.
   d. Recommended corrections.

2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3. Examine walls and floors for suitable conditions where products and systems are to be installed.
4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Engineer. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb and make horizontal work level.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.

C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels without adequate personnel protection.

F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

1. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect.

I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.4 PROGRESS CLEANING

A. General: Clean Project site and work areas daily. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

1. Remove liquid spills promptly.
2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Comply with manufacturer's written instructions.

3.6 CORRECTION OF THE WORK

A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting installed items.

B. Restore permanent facilities used during construction to their original existing condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not function properly. Remove and replace components that cannot be repaired.

End of Section 017300

SECTION 017329

CUTTING AND PATCHING

PART 1- GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes procedural requirements for cutting and patching.

1.3 DEFENITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

B. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity that results in reducing their capacity to perform as intended, or that result in increased maintenance or decreased operational life or safety. Miscellaneous elements include the following:

1. Water, moisture, or vapor barriers.
2. Membranes and flashings.
3. Exterior wall construction.
4. Piping, ductwork, vessels, and equipment.

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

D. Cutting and Patching Conference: Before proceeding, meet at Project site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.

1.5 WARRANTY

A. Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Temporary Support: Provide temporary support of Work to be cut.

B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to minimize interruption to occupied areas.

3.3 PERFORMANCE

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete or Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Proceed with patching after construction operations requiring cutting are complete.

C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

1. Exposed Finishes: 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.

    a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
    b. Restore damaged pipe covering to its original condition.
    c. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

2. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

End of Section 017329

SECTION 017700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and provisions of Fixed Price Construction Contract and Division l Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Inspection procedures.
2. Warranties.
3. Final cleaning.

B. Refer also to requirements of Article 7 of the Fixed Price Construction Contract.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.

1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
2. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Prepare and submit Project Record Documents and similar final record information.
4. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
5. Complete cleaning requirements, including touchup painting.
6. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Engineer, that must be completed or corrected before certificate will be issued.

1. Re-Inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit a final Application for Payment.
2. Submit copy of Engineer's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Engineer. The copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit finals manuals.
4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
5. Submit all final project record documents.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Engineer will either proceed with inspection or notify Contractor of unfulfilled requirements. Engineer will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Re-Inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 WARRANTIES

A. Submittal Time: Submit written warranties on request of Engineer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period by separate agreement with Contractor.

C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-1l-inch (215-by-280-mm) paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer

PART 2 – PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

a. Remove tools, construction equipment, machinery, and surplus material from Project site.
b. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces.
c. Remove debris and surface dust from limited access spaces.
d. Sweep concrete floors broom clean.
e. Leave Project clean and ready for occupancy.

B. Pest Control: Make a final inspection and rid Project of rodents, insects, and other pests.

C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

End of Section 017700

SECTION 02221

EXCAVATION AND EMBANKMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. **Work included:** The work under this section shall consist of all earthwork and other related activities necessary to prepare the College of Western Idaho Area for construction. Topsoil shall be removed by the Contractor and used in construction of the landscape areas or hauled to an alternate site on the campus, as directed by the Owner, for reuse. All excavated materials not designated as topsoil shall become the ownership of the Contractor and be hauled off-site (campus) by the Contractor.

B. **Related information:** Work under this section shall conform to the requirements of Division 200 - Earthwork of the Idaho Standards for Public Works Construction (ISPWC), as amended, supplemented, or modified herein and in the drawings.

1.2 QUALITY ASSURANCE

The Contractor shall provide and maintain in good condition on the job site a minimum of one complete set of the most current edition of the ISPWC.

PART 2 - PRODUCTS

2.1 EMBANKMENT MATERIAL (GENERAL)

A. **Acceptance Required:** All embankment material shall be subject to the review and acceptance of the Engineer.

B. **Notification**: For approval of imported fill material, notify the Engineer at least 10 working days in advance of intension to import fill material, designate the proposed borrow area and provide to the Engineer a sample from the borrow area for the purpose of making acceptance tests to prove the quality of the material.

2.2 SUITABLE EMBANKMENT MATERIAL

A. Material suitable for STRUCTURAL FILL BACKFILL shall be aggregate material which is free from frozen material, organic matter and other deleterious substance. It shall contain no lumps over 6 inches in greatest dimension and not more than 15 percent of the rocks or lumps shall be larger than 3 inches in the greatest dimension.

B. Material suitable for EMBANKMENT construction shall meet the requirements of the STRUCTURAL BACKFILL with the following exceptions; materials generated in-site that exceed the maximum 6 inch dimension requirement but are less than 12 inches in dimension may be used for embankment construction within embankments that will allow placement of the oversized materials at least 10 inches from any final grade or surface.

C. All borrow material imported from an undesignated off-site area shall meet the requirements of STRUCTURAL EMBANKMENT as defined above - paragraph 2.2.A.

D. Imported material for BASE COURSE construction shall be ¾ inch minus material meeting the durability and materials requirements of subbase materials. The material shall meet the gradation requirements of aggregate for base courses as defined by the ISPWC.

2.3 UNSUITABLE MATERIAL

Material not meeting the requirements of SUITABLE EMBANKMENT MATERIAL as defined above or material having excess moisture following reasonable effort for moisture conditioning is considered unsuitable material. The determination of "Reasonable Effort" expended by the Contractor for moisture conditioning shall be solely determined by the Engineer and his decision shall be final related to unsuitable material classification.

2.4 OTHER MATERIAL

All other materials not specifically described but required for a complete and proper installation shall be as selected by the Contractor subject to the acceptance of the Engineer.

2.5 STABILIZATION FABRIC

Stabilization fabric if required shall be MIRAFI 600X or approved equal.

PART 3 - EXECUTION

3.1 GENERAL

All work shall comply with Division 200 - Earthwork, of the ISPWC Prior to all work of this Section, the Contractor shall become thoroughly familiar with the site, the site conditions and all portions of the work contained within this Section. All site embankments shall be to the lines and grades as indicated in the Contract Documents. Excavations for placement of structures or embankments shall be scheduled to provide minimum lag time between excavation and material placement. If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the Engineer, who shall arrange for their removal if necessary. The Contractor shall, at his/her own expense, satisfactorily repair or pay the cost of all damage to such facilities or structures which may result from any of the Contractor's operations during the period of the contract.

3.2 EXCAVATION

No excavation shall be started until the work has been staked out by the Contractor and approved by the Engineer. All suitable excavated material shall be used in the formation of embankment, subgrade, or for other purposes shown on the plans. The Contractor shall assume ownership of all unsuitable material and dispose of off-site unless otherwise directed by the Engineer.

When the volume of the excavation exceeds that required to construct the embankments to the grades indicated, the excess materials shall be used to grade the areas of ultimate development or disposed of as directed. When the volume of excavated materials is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

The grade shall be maintained so that the surface is well drained at all times. When necessary, temporary drains and drainage ditches shall be installed to intercept or divert surface water which may affect the work.

3.3 EXCESS WATER CONTROL

A. **Unfavorable Weather:** Do not place, spread or roll EMBANKMENT material during unfavorable weather conditions. Do not resume operations until moisture content and EMBANKMENT density are satisfactory to the Engineer.

B. **Flooding:** Provide berms or channels to prevent flooding of subgrade. Promptly remove all water collecting in depressions.

C. **Softened Subgrade:** Where soil had been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and re-compact as specified for effected area.

D. **Conditioning:** Apply all reasonable effort required to adjust the moisture content of EMBANKMENT materials to obtain the required percent moisture content as determined by proctor testing methods, prior to placement in compacted layers. The "Reasonable Effort" criteria is defined in paragraph 2.3 of this section. If the Contractor demonstrates he cannot obtain the required moisture content after applying reasonable effort the Engineer shall direct the Contractor to haul the unsuitable material to the designated on-site waste area.

3.4 EMBANKMENT CONSTRUCTION AND STRUCTURAL EMBANKMENT

A. **Placement:** After subgrade preparation has been completed and accepted by the Engineer EMBANKMENT materials shall be placed in uniform horizontal layers not exceeding 12 inches in un-compacted thickness.

B. **Moisture-Conditioning:** The moisture content of the material during placing operations shall not be below, nor more than 1-1/2 percentage points above, the optimum moisture content as determined by AASHTO T-99. The moisture content shall be uniform throughout the full depth of the lift. To achieve this, the Contractor shall mix the moistened materials thoroughly in a windrow or otherwise manipulate the materials to achieve the specified uniform moisture content.

C. Compaction, General: Compact each soil layer to a minimum of 95% COMPACTION. Repeat placement and compaction process until the desired grade is attained.

D. Compaction Requirements:

Table 1. Standard Proctor*

ITEM	(%)
Embankment Construction	95
Structural Embankment	95
Structural Backfill	95
Subgrade Preparation	95
Subbase Course	95
Base Course	95

**as determined by ASTM D 698*

3.5 TOLERANCE

In those areas in which a subbase, or base course is to be placed, the top of the subgrade shall be of such smoothness that when tested with a 16-foot straight edge, applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2-inch, or shall not be more than 0.05-feet from the true grade, as established by grade hubs, or pins. Any deviations in these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and re-compacting.

PART 4 - METHOD OF MEASUREMENT

4.1 The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

5.1 The Contractor is responsible for including in the total lump sum price all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

End of Section 02221

SECTION 02230

SUBBASE COURSE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work included: This item shall consist of the structural fill course constructed on a prepared subgrade in accordance with these specifications, and in conformance with the dimensions and typical cross sections shown on the plans.

B. Related information:

1. Work under this Section shall conform to the requirements of Division 800 - Aggregates and Asphalt of the most current edition of the Idaho Standards for Public Works Construction (ISPWC), as amended, supplemented, or modified herein and on the drawings.

2. Section 02221 – Excavation and Embankment.

1.2 QUALITY ASSURANCE

A. The Contractor shall provide and maintain, in good condition on the job site, one complete set of the most current edition of ISPWC.

PART 2 - PRODUCTS

Comply with ISPWC Division 800 - Aggregates and Asphalt.

PART 3 - EXECUTION

Comply with ISPWC Division 800 - Aggregates and Asphalt.

PART 4 - METHOD OF MEASUREMENT

The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

The Contractor is responsible for including in the total lump sum price all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

End of Section 02230

SECTION 02232

CRUSHED AGGREGATE BASE COURSE

PART 1 - GENERAL

1.1 DESCRIPTION

A. **Work included:** This item shall consist of base course composed of imported 3/4" crushed aggregates constructed on a prepared course in accordance with these specifications, and in conformance with the dimensions and typical cross sections shown on the plans.

B. **Related information:** Work under this Section shall conform to the requirements of Division 800 - Aggregates and Asphalt of the most current edition of the Idaho Standards for Public Works Construction (ISPWC), as amended, supplemented, or modified herein and on the drawings.

1.2 SUBMITTALS

A. The Contractor shall provide and maintain, in good condition on the job site, one complete set of the most current edition of ISPWC for reference.

PART 2 - PRODUCTS

Comply with this specification and ISPWC Section 802.

PART 3 - EXECUTION

Comply with this specification and ISPWC Section 802.

PART 4 - METHOD OF MEASUREMENT

The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

The Contractor is responsible for including in the total lump sum price all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

End of Section 02232

SECTION 02510

BITUMINOUS CONCRETE PAVEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. **Work included:** The work included under this Section shall consist of a surface course composed of mineral aggregate and bituminous material mixed in a central mixing plant and placed on a prepared course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross sections as shown on the plans. Each course shall be constructed to the depth, typical section, or elevation required by the plans and shall be rolled, finished, and approved before acceptance by the Owner.

B. **Related information:** Work under this Section shall conform to the requirements of Division 800 - Aggregates and Asphalt of the most current edition of the Idaho Standards for Public Works Construction (ISPWC), as amended, supplemented, or modified herein and on the drawings.

1.2 SUBMITTALS

A. The Contractor shall provide and maintain, in good condition on the job site, one complete set of the most current edition of ISPWC for reference.

B. Contractor shall submit to the Engineer for review and approval a copy of the asphalt mix design proposed to be used.

PART 2 - PRODUCTS

Comply with ISPWC Sections 802, 803, 805, 806, and 807. Asphalt cement to be used in the mix shall be AC-10. Anti-stripping agents may be required for the asphalt mix.

PART 3 - EXECUTION

Comply with ISPWC Sections 806, 808, 809, 810, and 811.

PART 4 - METHOD OF MEASUREMENT

The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

The Contractor is responsible for including in the total lump sum price all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

End of Section 02510

SECTION 02574

ASPHALT SURFACE REPAIR

PART 1 - GENERAL

1.1 DESCRIPTION

A. **Work included:** This item shall consist of the removal of an existing asphalt section to subgrade, and installing an asphalt section in accordance with these specifications, and in conformance with the dimensions and typical cross sections shown on the plans.

B. **Related information:** Work under this Section shall conform to the requirements of Division 800 - Aggregates and Asphalt of the most current edition of the Idaho Standards for Public Works Construction (ISPWC), as amended, supplemented, or modified herein and on the drawings.

1. Section 02221 Excavation.
2. Section 02230 Subbase.
3. Section 02232 Crushed Aggregate Base Course.
4. Section 02510 Bituminous Concrete Pavement.

1.2 QUALITY ASSURANCE

A. The Contractor shall provide and maintain, in good condition on the job site, one complete set of the most current edition of ISPWC.

PART 2 - PRODUCTS

Comply with Section 02221, 02230, 02232 and 02510 of this specification and ISPWC Section 801.

PART 3 - EXECUTION

Comply with Section 02221, 02230, 02232, 02510 of this specification and ISPWC Division 800.

PART 4 - METHOD OF MEASUREMENT

The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

The Contractor is responsible for including in the total lump sum price all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

End of Section 02574

SECTION 02580

PAVEMENT STRIPING AND MARKING

PART 1 - GENERAL

1.1 DESCRIPTION

This item shall consist of the painting of parking lot stalls, handicapped markers, reserved parking stalls as detailed in the plans. Striping and marking shall be applied in accordance with these specifications and at the locations shown on the plans.

1.2 SUBMITTALS

The Contractor shall furnish certified test report for the materials shipped to the project. The reports shall not be interpreted as a basis for final acceptance. The Contractor shall notify the Engineer upon arrival of a shipment of paint to the job site. All paint shall be delivered to the site of application in un-tampered containers, labeled completely with information of the lot and batch number, date of sampling, contract number, and applicable specifications. All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the site or destroyed until authorized by the Engineer.

PART 2 - MATERIALS

A. Paint shall meet the requirements of the appropriate Federal Specification(s) as listed below. The color shall be Traffic Yellow, White and Blue for handicapped marking only.

Striping and Marking, Water Emulsion Base TT-P-1952

B. Signs - Handicapped markers shall consist of one sign per handicapped stall mounted on a 2 inch galvanized steel pole at the locations shown on the plan. The sign sizes, text and text height shall conform to the latest Federal ADA requirements.

PART 3 - EXECUTION

3.1 PAINT APPROVAL

No painting shall be performed until the Engineer has inspected the materials certification forms and the un-tampered containers at the site and approved the paint for the project.

3.2 WEATHER LIMITATIONS

The painting shall be performed only when the surface is dry and when the atmospheric temperature and surface temperature is above 45° F (7° C) and rising. When the weather is windy, the Engineer shall stop the painting operation if in his/her opinion the final product is adversely impacted. Painting shall not be performed in foggy weather.

3.3 EQUIPMENT

All equipment for the work shall be approved by the Engineer and shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, and such auxiliary hand painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray type marking machine, with automatic on/off device, suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall be designed so as to apply markings of uniform cross sections and width and clear-cut edges without running or spattering.

The air compressor shall have a minimum capacity of 50 cubic feet per minute.

3.4 PREPARATION OF SURFACE

Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance and loose materials.

Paint shall not be applied to Portland cement concrete pavement until the concrete in the areas to be painted is clean of curing material. Sandblasting or high pressure water shall be used to remove curing material from concrete surfaces.

Prior to re-striping, loose paint on existing stripes or marks shall be removed to the satisfaction of the Engineer.

3.5 LAYOUT OF MARKINGS

On those sections of pavement where no previously applied markings are available to serve as a guide, the proposed markings shall be laid out in advance of the paint application by the Contractor.

The Contractor shall provide base control points as necessary for layout of striping and marking.

The Contractor shall lay out the precise locations for specified striping and marking based on the control points established.

Detailed layout shall generally conform to the plan and is subject to the Engineer’s review and approval.

3.6 APPLICATION

Markings shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface have been approved by the engineer. No work shall be done when fog restricts visibility or when the surface to be marked is wet or damp or of too low a temperature to allow the paint to properly cure or when wind causes paint to blow outside of stripe limits.

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate of 100 to 110 square feet per gallon. The addition of thinner will not be permitted. The maximum speed of the striping machine while applying paint shall not exceed 10 miles per hour.

A minimum period of 7 days shall elapse between placement of a bituminous surface course and application of water emulsion based paint (TT-P-1952) in order to allow adequate curing of the pavement surface and to prevent peeling and blistering of the paint. The Engineer may require

temporary markings at 60 percent of the specified coverage and repainting the markings with a new application after the asphalt has cured.

The edges of the markings shall not vary from a straight line more than 1/4 inch in 20 feet and the dimensions shall be within a tolerance of plus or minus 5 percent.

Abrupt changes or breaks in alignment between broken segments will not be permitted.

All lines shall be clean and sharp to the dimensions shown on the drawings. Ragged ends of segments, fogginess along edges or objectionable drizzling along the unpainted portion of the surface shall not be permitted. Any smears shall be removed or painted out whith black paint.

The finished product shall have an opaque, well-painted appearance, with no black or the discoloration showing through the paint. The Engineer shall be the judge of the accuracy and quality of painting and marking.

3.7 PROTECTION

After application of the paint, all markings shall be protected from damage until the paint is dry. All surfaces shall be protected from disfiguration by spatter, splashes, spillage or drippings of paint.

PART 4 - METHOD OF MEASUREMENT

4.1 The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

5.1 The Contractor is responsible for including in the total lump sum price of all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

PART 6 - MATERIAL REQUIREMENTS

Fed.Spec. TT-P-1952 Paint, Traffic Yellow, White and Blue Water Emulsion Base

End of Section 02580

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 DESCRIPTION

A. **Work included:** Provide complete and in place, all steel required for reinforcement of cast-in-place concrete as shown on the Drawings.

B. **Related work described elsewhere:** Steel reinforcement is also required under Section 03300.

1.2 QUALITY ASSURANCE

Comply with pertinent provisions of following standards, except as herein modified.

A. CRSI "Manual of Standard Practice."

B. ACI 318 "Building Code Requirements for Reinforced Concrete."

C. ACI 315 "Manual for Detailing Reinforced Concrete Structures."

D. Contractor shall be required to have in possession at the work site the latest editions of CRSI "Manual of Standard Practice" and ACI "Manual of Concrete Practice - Part 2" for reference to the Contractor and Engineer.

1.3 PRODUCT HANDLING

A. **Delivery:** Deliver reinforcement to the job site bundled, tagged, and marked. Use tags indicating bar size, lengths, and other information corresponding to markings shown on placement diagrams.

B. **Storage:** Store reinforcement at the job site above the ground on sufficient supports to prevent damage and accumulation of dirt and excessive rust.

PART 2 - PRODUCT

2.1 MATERIALS

Reinforcing bars: Comply with ASTM A 615, Grade 60.

Steel wire: Comply with ASTM A 82.

Welded wire fabric: Comply with ASTM A 185.

Supports for reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcement in place:

A. Use wire bar type supports complying with CRSI recommendations, unless otherwise indicated. Do not use wood, brick, and other unacceptable materials.

B. For slabs on grade, use supports with sand plates or horizontal runners.

C. Rebar supports for structure walls, ceilings, supported floors and cover slabs, shall be Class C (plastic coated steel.) Comply with ACI 315.

2.2 FABRICATION

General: Fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying whit CRSI Manual and ACI code. In case of fabricating errors, do not re-bend or straighten reinforcement.

Unacceptable materials: Reinforcement with any of the following defects will not be permitted in the work.

A. Bar lengths, depths, and bends exceeding specified fabrication tolerances.

B. Bend or kinks not indicated on Drawings or final Shop Drawings.

C. Bars with reduced cross section due to excessive rusting or other cause.

D. Bars which have been heated to facilitate bending.

PART 3 - EXECUTION

3.1 INSPECTION

Examine the substrate, formwork, and the conditions under which concrete reinforcement is to be placed, and correct conditions which would prevent proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

General: Comply with the specified standards for details and methods of reinforcement placement and supports, and as herein specified.

Clean reinforcement to remove loose rust and mill scale, earth, and other materials which reduce or destroy bond with concrete.

Position, support, and secure reinforcement against displacement by formwork construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required. Reinforcing placement sequences shown on the Drawings are critical and must be followed.

Place reinforcement to obtain the minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that twisted ends are directed away from exposed concrete surfaces. Remove all tags and thoroughly clean forms when finished.

For structural slabs, contact the Engineer for inspection of reinforcing placement when the bottom layer is complete and before starting the top layer.

For walls, contact the Engineer for inspection of reinforcing placement before allowing the second side of forms to be placed.

Install welded wire fabric in as long of a length as practiced. Lap adjoining pieces at least one full mesh and tie together.

Provide supports of sufficient numbers and strength to carry reinforcement and construction traffic. Do not place reinforcing bars more than 2" beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact, and tying together tightly. All splicing shall be detailed on the appropriate shop drawings and adhered to during the field installation, unless otherwise stated in the contract documents.

PART 4 - METHOD OF MEASUREMENT

4.1 The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

5.1 The Contractor is responsible for including in the total lump sum price all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

End of Section 03200

SECTION 03300

CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Included: The Work included in this section shall consist of constructing new reverse flow curb and gutter as indicated on the plans.

B. Related Information: Work under this section shall conform to the requirements of Divisions 200 "Earthwork", 700 "Concrete" and 800 "Aggregates and Asphalt" of the Idaho Standards for Public Works Construction (ISPWC), as amended, and as supplemented or modified herein or on the drawings.

1. Section 2221: Excavation and Embankment.

2. Section 2232: Crushed Aggregate Base Course

3. ISPWC Standard Drawings for Pedestrian Ramp Construction, attached to this Section, including SD-715A, SD-715B, SD-715C, SD-715D, and SD-715E.

1.2 QUALITY ASSURANCE

The Contractor shall provide and maintain in good condition, on the job site, a minimum of one complete set of the most current edition of the ISPWC for reference.

1.3 SUBMITTALS

A. General: Concrete mix designs shall be submitted to the Engineer for review and comment 7 days prior to the placement of all concrete work including, but not limited to curb and gutter.

PART 2 - PRODUCTS

A. MATERIALS: All materials used in this section shall comply with the requirements set forth in ISPWC Standards and from accepted sources for material production. Comply with ISPWC Divisions 200, 700, 800 and all subsections of list that are appropriate.

B. CONCRETE: All concrete shall be Class 3000, as described in Section 701 of the ISPWC.

PART 3 - EXECUTION

3.1 Comply with ISPWC Divisions 200, 700, 800 and all subsections of listed that are appropriate. The Contractor shall comply to the size and dimensions shown on the plans or as directed by the Engineer in the construction of the facilities specified in this section.

PART 4 - METHOD OF MEASUREMENT

4.1 The Contractor is responsible for physically measuring all surfaces and determining the amount of materials, equipment and workmanship necessary to provide an approved finished product.

PART 5 - BASIS OF PAYMENT

5.1 The Contractor is responsible for including in the total lump sum price all costs associated with the supply of materials, preparation, delivery and application of materials and for all labor, equipment, tools and incidentals necessary to complete the item.

End of Section 03300

SECTION 260100 - BASIC ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this Section to expand the requirements specified in Division 01:
   1. Definitions.
   2. Code compliance.
   3. Drawings and specifications.
   4. Submittals.
   5. Coordination drawings.
   6. Guarantee of installation.
   7. Record documents.
   8. Maintenance manuals.
   9. Delivery, storage and handling.
   10. Temporary Electrical services.
   11. Instruction of Owners personnel.
   12. Rough-ins.
   13. Fees and permits.
   14. Electrical installations.
   15. Cutting and patching.
   16. Excavation and backfilling.

B. Furnish and install all materials and equipment and provide all labor required and necessary to complete the work shown on the drawings and/or specified in all Sections of Division 26 and all other work and miscellaneous items, not specifically mentioned, but reasonably inferred for a complete installation including all accessories and appurtenances required for testing the system. It is the intent of the drawings and specifications that all systems be complete, and ready for operation. All specified products shall be installed in accordance with all manufacturers' instructions and requirements.

1.3 DEFINITIONS

A. Finished Spaces: Spaces other than mechanical and electrical equipment rooms, furred spaces, chases, unheated spaces immediately below roof, spaces above ceilings, unexcavated spaces, crawlspaces, and tunnels.

B. Exposed, Interior Installations: Exposed to view indoors. Examples include finished occupied spaces and electrical equipment rooms.

C. Exposed, Exterior Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions. Examples include rooftop locations.

D. Concealed, Interior Installations: Concealed from view and protected from physical contact by building occupants. Examples include above ceilings and in chases.

E. Concealed, Exterior Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.

1.4 CODE COMPLIANCE

A. All work and materials shall comply with the latest rules, codes and regulations, including, but not limited to the following:
   1. Occupational Safety and Health Act Standards (OSHA).
   2. ANSI/IEEE C-2 - National Electrical Safety Code.
   3. ADAAG (ADA) Standards - Americans With Disabilities Act.
   4. CABO-ANSI A117.1.
   5. IEEE Standards.
   6. Underwriter's Laboratory – U.L. All products shall be U.L. Listed.
   7. NFPA – National Fire Protection Association Codes and Standards of Installation.
      a. NFPA 70 – National Electric Code
   8. NECA - Standard of Installation.
   9. NEMA – Standard of Installation
   10. International Building Code
   11. International Fire Code

B. Work to be executed and inspected in accordance with local codes and ordinances. Permits, fees or charges for inspection or other services shall be paid for by this Contractor. Local codes and ordinances are to be considered as minimum requirements and must be properly executed without expense to the Owner; but do not relieve the Contractor from work shown that exceeds minimum requirements.

1.5 DRAWINGS AND SPECIFICATIONS

A. All drawings and all Divisions of these specifications shall be considered as a whole and work of this Division shown anywhere therein shall be furnished under this Division.

B. Drawings are diagrammatic and indicate the general arrangement of equipment and wiring. Most direct routing of conduits and wiring is not assured. Exact requirements shall be governed by architectural, structural and mechanical conditions of the job. Consult all other drawings in preparation of the bid. Extra lengths of wiring or addition of pull or junction boxes, etc., necessitated by such conditions shall be included in the bid. Check all information and report any apparent discrepancies before submitting bid.

1.6 SUBMITTALS

A. General: Follow the procedures specified in Division 01 Section "SUBMITTALS".

B. Substitutions and Material Submittals: By specific designation and description, standards are established for specialties and equipment.

C. Other makes of specialties and equipment of equal quality will be considered, provided such proposed substitutions are submitted to the Architect for approval at least seven (7) calendar days prior to bid opening. A schedule showing make, type, manufacturer's name and trade designation of

all materials and equipment proposed as a substitution shall be submitted together with a single copy of the manufacturer's complete specifications. A list of approved substitutions will be published as an Addendum.

D. Design is based on equipment as listed in schedules on drawings and included in these specifications. All changes in foundations, bases, supports, connections, controls, space, openings, walls and ceilings and sound and vibration isolation, seismic support, and electrical and mechanical characteristics required by alternate equipment specified, submitted and approved shall be made at no additional cost to the Owner.

E. Approval rendered on shop drawings shall not be considered as a guarantee of measurements or building conditions. Where drawings are approved, said approval does not mean that drawings have been checked in detail; said approval does not in any way relieve the contractor from his responsibility or necessity of furnishing material or performing work as required by the contract drawings and specifications.

1.7 ELECTRONIC SUBMITTAL PROCEDURE

A. Summary:

1. Shop drawings and product data submittals shall be transmitted to Architect in electronic (PDF) format using Submittal Exchange, a website service designed specifically for transmitting submittals between construction team members.
2. The intent of electronic submittals is to expedite the construction process by reducing paperwork, improving information flow, and decreasing turnaround time.
3. The electronic submittal process is not intended for color samples, color charts, or physical material samples.
4. LCA Architects will be the Submittal Exchange Administrator.

B. Procedures:

1. Create submittal log in Submittal Exchange by inserting required submittals listed in individual specification section.
2. Submittal Preparation – Contractor may use any or all of the following options:

    a. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via the Submittal Exchange website.
    b. Subcontractors and Suppliers provide electronic (PDF) submittals to Contractor via email.
    c. Subcontractors and Suppliers provide paper submittals to Scanning Service which electronically scans and converts to PDF format.

3. Printed Submittals: Provide two printed sets of submittals for shop drawings for structural framing in addition to electronic submittals.
4. Contractor shall review and apply electronic stamp certifying that the submittal complies with the requirements of the Contract Documents including verification of manufacturer / product, dimensions and coordination of information with other parts of the work.
5. Contractor shall transmit each submittal to Architect using the Submittal Exchange website, www.submittalexchange.com.
6. Architect / Engineer review comments will receive email notice of completed review.
7. Distribution of reviewed submittals to subcontractors and suppliers is the responsibility of the Contractor.
8. Submit paper copies of any reviewed submittals not submitted electronically at project closeout for record purposes in accordance with Section 017700 – CLOSEOUT PROCEDURES.

C. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not a as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable. Include the following information, as applicable.
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specification.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.

3. For equipment, include the following in addition to the above, as applicable:

   a. Wiring diagrams showing factory-installed wiring.
   b. Printing performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

4. Submit Product Data before or concurrent with Samples.
   Submit Product Data in the following format.
   a. Electronic (PDF) format using Submittal Exchange.

D. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the contract Documents or standard data.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the Following information, as applicable:
   a. Identification of products.
   b. Schedules.
   c. Compliance with specified standards.
   d. Notation of coordination requirements.
   e. Notation of dimensions established by field measurement.
   f. Relationship and attachment to adjoining construction clearly indicated.
   g. Seal and signature of professional engineer if specified.

2. Sheet Size: Except for templates , patterns, and similar full-size drawings, submit Shop Drawings on sheets a least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 42 inches (750 by 1067 mm)
3. Submit Shop Drawings in the following format:
   a. Electronic (PDF) format using Submittal Exchange.

E. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Attach label on unexposed side of Samples that includes the following:
   a. Generic description of Sample.

b. Product name and name of manufacturer.
c. Sample source.
d. Number title of application Specification Section.

3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

a. Sample not incorporated with Work, or otherwise designated as Owner's property, are the property of Contractor.

4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

a. Number of Samples: Submit three full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.

F. Coordination Drawings: Comply with requirements specified in Division 01 Section "PROJECT MANAGEMENT AND COORDINATION."

G. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects names and addresses, contact information of architects and owners, and other information specified.

H. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification and Procedure Qualification Record on American Welding Society (AWS) forms. Include names of firms and personnel certified.

I. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.

J. Manufacturer Certificates: Submit written statements on manufacture's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.

K. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.

L. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

M. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indication and interpreting test results of material for compliance with requirements in the Contract Documents

N. Product Test Reports: Submit written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency

O. Schedule of Tests and Inspections: Comply with requirements specified in Division 01 Section "QUALITY REQUIREMENTS."

P. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.

Q. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

R. Field Test Reports: Submit reports indicating and interpreting results of field test performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.

S. Maintenance Data: Comply with requirements specified in Division 01 Section "OPERATION AND MAINTENANCE DATA."

T. Design Data: Prepare and submit written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page number.

1.8 GUARANTEE OF INSTALLATION

A. All work under this section shall be guaranteed in writing to be free of defective work, materials, or parts for a period of two (2) years from the date of Substantial Completion.

A. Manufacturer's specific warranties and those specified in this Section shall be included in the Contractor's Guarantee of Installation.

B. Repair, revision or replacement of any and all defects, failure or inoperativeness shall be done by this section at no cost to the Owner.

1.9 RECORD DOCUMENTS

A. Prepare record documents in accordance with the requirements in Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, indicate the following installed conditions:
   1. Conduit racks, size, location, and routing, for interior locations. Show all wiring device locations and connections, control locations, disconnect switch locations, and final equipment locations including actual dimensions.
   2. Luminaire locations and wiring connections.
   3. Update luminaire schedule to reflect actual manufacturer's components used complete with updated part numbers and lists.
   4. Underground ductbank locations, routings, and quantity of conduits utilized.
   5. All approved substitutions, Contract Modifications and actual equipment and materials installed.
   6. Contract Modifications, actual equipment and materials installed.

1.10 MAINTENANCE MANUALS

A. Prepare maintenance manuals in accordance with Division 01 Section "PROJECT CLOSEOUT." In addition to the requirements specified in Division 01, include the following information for equipment

and systems:

1. Description of function, normal operating characteristics and limitations, performance and engineering data and tests, and complete nomenclature and commercial numbers of replacement parts.
2. Manufacturer's printed operating procedures to include start-up, break-in and routine and normal operating instructions, regulation, control, stopping shutdown and emergency instructions.
3. Maintenance procedures for routine preventative maintenance and troubleshooting, disassembly, repair and reassembly, aligning and adjusting instructions.
4. Servicing instructions and schedules.
5. Complete inventory list of ALL spare and loose parts delivered to Owner at completion of work. Inventory list shall include the applicable specification section, description of parts, manufacturer make/model, quantity and current list pricing.

1.11 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, and handle materials in a manner to prevent damage or interference with traffic conditions.

B. Protect equipment from weather and dampness.

C. All material stored on site shall be protected to Owner's standards. Owner may reject any or all material documented to have been improperly stored. Replacement of improperly stored material shall be solely at the contractor's expense.

1.12 TEMPORARY ELECTRICAL SERVICES

A. Temporary wiring for construction light and power for the general contractor or other subcontractors shall not be included as a part of this section of the work. Refer to Division 01 regarding payment for the electrical energy used for construction light and power and testing of the new installation.

1.13 INSTRUCTION OF OWNER'S PERSONNEL

A. The Contractor shall conduct an on-site instructional tour of the entire project. The personnel designated by the Owner shall be instructed in: operation of all electrical systems, elementary trouble-shooting procedures, preventive maintenance procedures, uses of Operation and Maintenance Manuals, relamping and cleaning of lighting fixtures and operation of all communication systems. Refer to Division 1 for additional requirements.

1.14 PRODUCT SOURCE LIMITATIONS

A. Products specified in Division 26 Sections**,** LOW-VOLTAGE DISTRIBUTION TRANSFORMERS, SWITCHBOARDS, and ENCLOSED SWITCHES AND CIRCUIT BREAKERS shall be obtained through one source through a single manufacturer. Source limitations in these individual sections shall not be construed to allow sourcing within these individual sections on an independent basis.

1.15 INCENTIVES AND REBATES

A. All incentives and rebates offered by outside agencies relating to Energy Efficiency or Tax Incentives offered by Governmental agencies shall be considered property of the Owner and shall not be granted to any contractor performing work on the project.

PART 2- PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 FEES AND PERMITS

A. Arrange and pay for any fees, permits, connections charges, hook-up fees, etc. required with local governing bodies, utilities, etc.

3.2 ROUGH-IN

A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.

B. Refer to equipment specifications in all other Divisions of work for rough-in requirements.

3.3 ELECTRICAL INSTALLATIONS

A. General: Sequence, coordinate and integrate the various elements of electrical systems, materials and equipment. Comply with the following requirements:
   1. Coordinate electrical systems, equipment and materials installation with other building components. Inform Contractors of other trades of the required access to and clearances around electrical equipment to maintain serviceability and code compliance.
   2. Verify all dimensions by field measurements.
   3. Arrange for chases, slots and openings in other building components during progress of construction to allow for electrical installations.
   4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components as they are constructed.
   5. Sequence, coordinate and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing in the Building.
   6. Where mounting heights are not detailed or dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
   7. Coordinate connection of electrical systems with exterior underground and overhead service companies and controlling agencies. Provide required connection for each service.
   8. Install systems, materials and equipment to conform with approved submittal data, including coordination drawings, to the greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirement, refer conflict to the Architect.
   9. Install systems, materials and equipment level and plumb, parallel and perpendicular to other building systems and components where installed exposed in finished spaces.
   10. Install electrical equipment to facilitate servicing, maintenance and repair or replacement of equipment components and as required by Code. As much as practical, connect equipment for ease of disconnecting with minimum of interference with other installations.
       a. All electrical items, equipment, etc. requiring access and maintenance to be provided with access panels by electrical contractor when located behind hard inaccessible finished surfaces. See Architectural ceiling plans for ceiling and wall finish types.
   11. Install access panel or doors where equipment is concealed behind finished surfaces. Access panels and doors are specified in Division 8 Section “ACCESS DOORS”.
   12. Install systems, materials, and equipment giving right-of-way priority to systems required to be installed at a specified slope.

13. Only quality workmanship will be accepted. Haphazard or poor installation practice will be cause for rejection of work.
14. Provide foreman in charge of this work at all times.
15. Where the specifications call for an installation to be made in accordance with Manufacturer's recommendations, a copy of such recommendations shall at all times be kept in the job superintendent's office and shall be available to the Owner's representative.

3.4 QUALITY ASSURANCE

A. Provide a meaningful Quality Assurance program. To assist the Contractor in this program, the specifications contained herein are set forth as the minimum acceptable requirements. This does not relieve the Contractor from executing other Quality Assurance measures to obtain a complete operating facility within the scope of this project.

B. The Contractor shall insure that all workmanship, all materials employed, all required equipment and the manner and method of installation conforms to accepted construction and engineering practices, and that each piece of equipment is in satisfactory working condition to satisfactorily perform its functional operation.

C. Provide quality assurance tests and operational check on all components of the electrical distribution system, all lighting fixtures, and communication systems.

3.5 CUTTING AND PATCHING

A. General: Perform cutting and patching in accordance with Division 01 Section “CUTTING AND PATCHING.” In addition to the requirements specified in Division 01, the following requirements apply:
   1. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
   2. No joists, beams, girders, structural columns, or other structural assemblies/components shall be cut by any contractor without obtaining written permission from the Architect.

B. Perform cutting, fitting and patching of electrical equipment and materials required to:
   1. Uncover work to provide for installation of ill-timed work.
   2. Remove and replace defective work.
   3. Remove and replace work not conforming to requirements of the Contract Documents.
   4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
   1. Patch finished surfaces and building components using new materials specified for the original installation and experienced Installers. Installer’s qualifications refer to the materials and methods required for the surface and building components being patched.
      a. Refer to Division 01 Section “REFERENCES” for definition of “Experienced Installer.”

3.6 EXCAVATION AND BACKFILL

A. General: Perform excavation and backfilling in accordance with Division 31 Section “EARTH MOVING.” In addition to the requirements specified in Division 31, the following requirements apply:
   1. Protection of Installed Work: During excavating and backfilling operations, protect adjacent installations.

B. Perform excavating and backfilling for electrical equipment and materials required to:

1. Uncover work to provide for installation of ill-timed work.
2. Remove and replace defective work.
3. Remove and replace work not conforming to requirements of the Contract Documents.
4. Upon written instructions from the Architect, uncover and restore work to provide for Architect/Engineer observation of concealed work.

C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

END OF SECTION 260100

SECTION 260513 - MEDIUM-VOLTAGE CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes cables and related splices, terminations, and accessories for medium-voltage electrical distribution systems.

1.3 DEFINITIONS

A. NETA ATS: Acceptance Testing Specification.

1.4 SUBMITTALS

A. Product Data: For each type of cable indicated. Include splices and terminations for cables and cable accessories.

B. Qualification Data: For Installer and testing agency.

C. Material Certificates: For each cable and accessory type, signed by manufacturers.

D. Field quality-control test reports.

1.5 QUALITY ASSURANCE

A. Installer: Engage a cable splicer, trained and certified by splice material manufacturer, to install, splice, and terminate medium-voltage cable.

B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

C. Source Limitations: Obtain cables and accessories through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with IEEE C2 and NFPA 70.

1.6 PROJECT CONDITIONS

A. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
2. Do not proceed with interruption of electric service without Construction Manager's written permission.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Cables:

a. American Insulated Wire Corp.; a Leviton Company.
b. General Cable Technologies Corporation.
c. Kerite Co. (The); Hubbell Incorporated.
d. Okonite Company (The).
e. Pirelli Cables & Systems NA.
f. Rome Cable Corporation.
g. Southwire Company.

2. Cable Splicing and Terminating Products and Accessories:

a. Engineered Products Company.
b. G&W Electric Company.
c. MPHusky.
d. Raychem Corp.; Telephone Energy and Industrial Division; Tyco International Ltd.
e. RTE Components; Cooper Power Systems, Inc.
f. Scott Fetzer Co. (The); Adalet.
g. Thomas & Betts Corporation.
h. Thomas & Betts Corporation/Elastimold.
i. 3M; Electrical Products Division.

2.2 CABLES

A. Cable Type: MV105.

B. Comply with UL 1072, AEIC CS 8, ICEA S-93-639, and ICEA S-97-682.

C. Conductor: Copper.

D. Conductor Stranding: Concentric lay, Class B.

E. Strand Filling: Conductor interstices are filled with impermeable compound.

F. Conductor Insulation: Ethylene-propylene rubber.

1. Voltage Rating: 15 kV.
2. Insulation Thickness: 133 percent insulation level.

G. Shielding: Copper tape, helically applied over semiconducting insulation shield.

H. Cable Jacket: Sunlight-resistant PVC.

2.3 SPLICE KITS

A. Connectors and Splice Kits: Comply with IEEE 404; type as recommended by cable or splicing kit manufacturer for the application.

B. Splicing Products: As recommended, in writing, by splicing kit manufacturer for specific sizes, ratings, and configurations of cable conductors. Include all components required for complete splice, with detailed instructions.

1. Combination tape and cold-shrink-rubber sleeve kit with rejacketing by cast-epoxy-resin encasement or other waterproof, abrasion-resistant material.
2. Heat-shrink splicing kit of uniform, cross-section, polymeric construction with outer heat-shrink jacket.
3. Premolded, cold-shrink-rubber, in-line splicing kit.
4. Premolded EPDM splicing body kit with cable joint sealed by interference fit of mating parts and cable.

2.4 SOLID TERMINATIONS

A. Shielded-Cable Terminations: Comply with the following classes of IEEE 48. Insulation class is equivalent to that of cable. Include shield ground strap for shielded cable terminations.

1. Class 1 Terminations: Modular type, furnished as a kit, with stress-relief tube; multiple, molded-silicone rubber, insulator modules; shield ground strap; and compression-type connector.
2. Class 3 Terminations: Kit with stress cone and compression-type connector.

2.5 SEPARABLE INSULATED CONNECTORS

A. Description: Modular system, complying with IEEE 386, with disconnecting, single-pole, cable terminators and with matching, stationary, plug-in, dead-front terminals designed for cable voltage and for sealing against moisture.

B. Terminations at Distribution Points: Modular type, consisting of terminators installed on cables and modular, dead-front, terminal junctions for interconnecting cables.

C. Load-Break Cable Terminators: Elbow-type units with 200-A load make/break and continuous-current rating; coordinated with insulation diameter, conductor size, and material of cable being terminated. Include test point on terminator body that is capacitance coupled.

D. Dead-Front Terminal Junctions: Modular bracket-mounted groups of dead-front stationary terminals that mate and match with above cable terminators. Two-, three-, or four-terminal units as indicated, with fully rated, insulated, watertight conductor connection between terminals and complete with grounding lug, manufacturer's standard accessory stands, stainless-steel mounting brackets, and attaching hardware.

1. Protective Cap: Insulating, electrostatic-shielding, water-sealing cap with drain wire.
2. Portable Feed-Through Accessory: Two-terminal, dead-front junction arranged for removable mounting on accessory stand of stationary terminal junction.
3. Grounding Kit: Jumpered elbows, portable feed-through accessory units, protective caps, test rods suitable for concurrently grounding three phases of feeders, and carrying case.
4. Standoff Insulator: Portable, single dead-front terminal for removable mounting on accessory stand of stationary terminal junction. Insulators suitable for fully insulated isolation of energized cable-elbow terminator.

2.6 SOURCE QUALITY CONTROL

A. Test and inspect cables according to ICEA S-97-682 before shipping.

B. Test strand-filled cables for water-penetration resistance according to ICEA T-31-610, using a test pressure of 5 psig (35 kPa).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install cables according to IEEE 576.

B. Pull Conductors: Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

1. Where necessary, use manufacturer-approved pulling compound or lubricant that will not deteriorate conductor or insulation.
2. Use pulling means, including fish tape, cable, rope, and basket-weave cable grips that will not damage cables and raceways. Do not use rope hitches for pulling attachment to cable.

C. Install "buried-cable" warning tape 12 inches (305 mm) above cables.

D. In manholes, handholes, pull boxes, junction boxes, and cable vaults, train cables around walls by the longest route from entry to exit and support cables at intervals adequate to prevent sag.

E. Install cable splices at pull points and elsewhere as indicated; use standard kits.

F. Install terminations at ends of conductors and seal with standard kits.

G. Install separable insulated-connector components as follows:

1. Protective Cap: At each terminal junction, with one on each terminal to which no feeder is indicated to be connected.
2. Standoff Insulator: Three.

H. Ground shields of shielded cable at terminations, splices, and separable insulated connectors. Ground metal bodies of terminators, splices, cable and separable insulated-connector fittings, and hardware.

I. Identify cables according to Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.2 FIELD QUALITY CONTROL

A. Testing: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

B. Perform the following field tests and inspections and prepare test reports:

1. Perform each visual and mechanical inspection and electrical test stated in NETA ATS. Certify compliance with test parameters.
2. After installing medium-voltage cables and before electrical circuitry has been energized, test for compliance with requirements.

C. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 260513

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Connectors, splices, and terminations rated 600 V and less.

1.3 DEFINITIONS

A. RoHS: Restriction of Hazardous Substances.

B. VFC: Variable-frequency controller.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Schedule: Indicate type, use, location, and termination locations.

1.5 CLOSEOUT SUBMITTALS

A. Field quality-control test and reports.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

B. Comply with NFPA 70.

2.2 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. American Insulated Wire Corp.; a Leviton Company.
2. General Cable Corporation.
3. Senator Wire & Cable Company.
4. Southwire Company.
5. Republic Wire Company.

2.3 COPPER BUILDING WIRE

A. Description: Flexible, insulated and uninsulated, drawn copper current-carrying conductor with an overall insulation layer or jacket, or both, rated 600 V or less.

B. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. RoHS compliant.
3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

C. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.

D. Conductor Insulation. Comply with NEMA WC70 for the following types:

1. Type THHN and Type THWN-2: Comply with UL 83.

2.4 IDENTIFICATION

A. Identify and color-code conductors and cables according to DIVISION 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

2.5 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

B. Available Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Hubbell Power Systems, Inc.
3. O-Z/Gedney; EGS Electrical Group LLC.
4. 3M; Electrical Products Division.

5. Tyco Electronics Corp.

C. Jacketed Cable Connectors: For steel jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.

D. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: Copper.
2. Type: Two hole with long barrels.
3. Termination: Compression.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Stranded Copper.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Service Entrance: Type THHN/THWN-2, single conductors in raceway.

B. Exposed Feeders: Type THHN/THWN-2, single conductors in raceway.

C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN/THWN-2, single conductors in raceway.

D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN/THWN-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal raceways with conductors and cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points according to DIVISION 26 Section "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

F. Support cables according to DIVISION 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

3.5 FIRESTOPPING

A. Apply firestopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to DIVISION 07 Section "PENETRATION FIRESTOPPING."

3.6 FIELD QUALITY CONTROL

A. Perform tests and inspections and prepare test reports.

1. After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors and conductors for compliance with requirements.

2. Perform each of the following visual and electrical tests:

   a. Inspect exposed sections of conductor and cable for physical damage and correct connection according to the single-line diagram.
   b. Test bolted connections for high resistance using one of the following:

      1) A low-resistance ohmmeter.
      2) Calibrated torque wrench.
      3) Thermographic survey.

   c. Inspect compression-applied connectors for correct cable match and indentation.
   d. Inspect for correct identification.
   e. Inspect cable jacket and condition.
   f. Insulation-resistance test on each conductor for ground and adjacent conductors. Apply a potential of 500-V dc for 300-V rated cable and 1000-V dc for 600-V rated cable for a one-minute duration.
   g. Continuity test on each conductor and cable.
   h. Uniform resistance of parallel conductors.

B. Cables will be considered defective if they do not pass tests and inspections.

C. Prepare test and inspection reports to record the following:

1. Procedures used.
2. Results that comply with requirements.
3. Results that do not comply with requirements, and corrective action taken to achieve compliance with requirements.

END OF SECTION 260519

SECTION 260526 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes grounding systems and equipment, plus the following special applications:

1. Underground distribution grounding.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 CLOSEOUT SUBMITTALS

A. Field quality-control reports.

1.5 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with UL 467 for grounding and bonding materials and equipment.

PART 2 - PRODUCTS

2.1 CONDUCTORS

A. Insulated Conductors: Copper or tinned-copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.

B. Bare Copper Conductors:

1. Solid Conductors: ASTM B 3.
2. Stranded Conductors: ASTM B 8.
3. Tinned Conductors: ASTM B 33.
4. Bonding Cable: 28 kcmil, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
5. Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.

6. Bonding Jumper: Copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
7. Tinned Bonding Jumper: Tinned-copper tape, braided conductors terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
8. Copper Strap: 0.022” thick, 2” wide minimum dimension solid copper strap.

C. Grounding Bus: Predrilled rectangular bars of annealed copper, 1/4 by 12 inches (6.3 by 305 mm) minimum size in cross section, with 9/32-inch (7.14-mm) holes spaced 1-1/8 inches (28 mm) apart. Stand-off insulators for mounting shall comply with UL 891 for use in switchboards, 600 V. Lexan or PVC, impulse tested at 5000 V. Larger sizes shall be utilized where additional connections are required.

2.2 CONNECTORS

A. Listed and labeled by an NRTL acceptable to authorities having jurisdiction for applications in which used and for specific types, sizes, and combinations of conductors and other items connected.

B. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.

C. Bus-Bar Connectors: Mechanical type, cast silicon bronze, solderless compression-type wire terminals, and long-barrel, two-bolt connection to ground bus bar.

D. Cable-to-Cable Connectors: Compression type, copper or copper alloy.

E. Conduit Hubs: Mechanical type, terminal with threaded hub.

F. Ground Rod Clamps: Mechanical type, copper or copper alloy, terminal with hex head bolt.

G. Service Post Connectors: Mechanical type, bronze alloy terminal, in short- and long-stud lengths, capable of single and double conductor connections.

H. Water Pipe Clamps:

1. U-bolt type with malleable-iron clamp and copper ground connector rated for direct burial.

2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad steel; 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

B. Chemical-Enhanced Grounding Electrodes: Copper tube, straight or L-shaped, charged with nonhazardous electrolytic chemical salts.

1. Termination: Factory-attached No. 4/0 AWG bare conductor at least 48 inches (1200 mm) long.
2. Backfill Material: Electrode manufacturer's recommended material.

PART 3 - EXECUTION

3.1 APPLICATIONS

A. Conductors: Stranded Copper unless otherwise indicated.

B. Underground Grounding Conductors: Install bare copper conductor, No. 2/0 AWG minimum.

1. Bury at least 24 inches (600 mm) below grade.
2. Duct-Bank Grounding Conductor: Bury 12 inches (300 mm) above duct bank when indicated as part of duct-bank installation.

C. Grounding Bus: Install as indicated.

1. Install bus on insulated spacers 2 inches (50 mm) minimum from wall, 6 inches (150 mm) above finished floor unless otherwise indicated.

D. Conductor Terminations and Connections:

1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
2. Underground Connections: Welded connectors except at test wells and as otherwise indicated.
3. Connections to Structural Steel: Welded connectors.

3.2 GROUNDING UNDERGROUND DISTRIBUTION SYSTEM COMPONENTS

A. Comply with IEEE C2 grounding requirements.

B. Grounding Manholes and Handholes: Install a driven ground rod through manhole or handhole floor, close to wall, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, nonshrink grout.

C. Grounding Connections to Manhole Components: Bond exposed-metal parts such as inserts, cable racks, pulling irons, ladders, and cable shields within each manhole or handhole, to ground rod or grounding conductor. Make connections with No. 4 AWG minimum, stranded, hard-drawn copper bonding conductor. Train conductors level or plumb around corners and fasten to manhole walls. Connect to cable armor and cable shields according to written instructions by manufacturer of splicing and termination kits.

D. Pad-Mounted Transformers and Switches: Install two ground rods and ground ring around the pad. Ground pad-mounted equipment and noncurrent-carrying metal items associated with substations by connecting them to underground cable and grounding electrodes. Install tinned-copper conductor not less than No. 2 AWG for ground ring and for taps to equipment grounding terminals. Bury ground ring not less than 6 inches (150 mm) from the foundation.

3.3 EQUIPMENT GROUNDING

A. Install insulated equipment grounding conductors with all feeders and branch circuits.

3.4 INSTALLATION

A. Grounding Conductors: Route along shortest and straightest paths possible unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

B. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade unless otherwise indicated.

1. Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating if any.
2. For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.

C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance except where routed through short lengths of conduit.

1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install bonding so vibration is not transmitted to rigidly mounted equipment.
3. Use exothermic-welded connectors for outdoor locations; if a disconnect-type connection is required, use a bolted clamp.

D. Grounding and Bonding for Piping:

1. Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes; use a bolted clamp connector or bolt a lug-type connector to a pipe flange by using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end. Water services include both domestic and fire sprinkler water services.
2. Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.

E. Grounding for Steel Building Structure: Welded visible connection to structural steel. Bond multiple connections together where steel structure is not continuously connected.

F. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to NFPA 70; use a minimum of 20 feet (6 m) of bare copper conductor not smaller than No. 4 AWG or size shown on drawings.

1. If concrete foundation is less than 20 feet (6 m) long, coil excess conductor within base of foundation.
2. Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts. Extend grounding conductor below grade and connect to building's grounding grid or to grounding electrode external to concrete.

3.5 LABELING

A. Comply with requirements in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS" Article for instruction signs. The label or its text shall be green.

3.6 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
2. Inspect physical and mechanical condition. Verify tightness of accessible, bolted, electrical connections with a calibrated torque wrench according to manufacturer's written instructions.
3. Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.

    a. Measure ground resistance no fewer than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    b. Perform tests by fall-of-potential method according to IEEE 81.

C. Grounding system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

E. Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Architect promptly and include recommendations to reduce ground resistance.

END OF SECTION 260526

SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.3 DEFINITIONS

A. EMT: Electrical metallic tubing.

B. IMC: Intermediate metal conduit.

C. RMC: Rigid metal conduit.

1.4 PERFORMANCE REQUIREMENTS

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.5 SUBMITTALS

A. Product Data: For the following:

1. Steel slotted support systems.

1.6 QUALITY ASSURANCE

A. Comply with NFPA 70.

1.7 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Allied Tube & Conduit.
      b. Cooper B-Line, Inc.; a division of Cooper Industries.
      c. ERICO International Corporation.
      d. GS Metals Corp.
      e. Thomas & Betts Corporation.
      f. Unistrut; Tyco International, Ltd.
      g. Wesanco, Inc.
   2. Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
   3. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
   1. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.
      a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
         1) Cooper B-Line, Inc.; a division of Cooper Industries.
         2) Empire Tool and Manufacturing Co., Inc.
         3) Hilti Inc.
         4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
         5) MKT Fastening, LLC.
   2. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
   3. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
   4. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
   5. Toggle Bolts: All-steel springhead type.
   6. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with the following for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter:

1. NECA 1
2. NECA 101
3. NECA 102
4. NECA 105
5. NECA 111

B. Comply with requirements of U.L. for firestopping materials and installation for penetration through fire-rated walls, ceilings, and assemblies.

C. Comply with requirements for raceways and boxes specified in DIVISION 26 SECTION "RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS."

D. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as scheduled in NECA 1, where its Table 1 lists maximum spacings less than stated in NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with single-bolt conduit clamps.

F. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.

3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches (100 mm) thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches (100 mm) thick.
6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate by means that meet seismic-restraint strength and anchorage requirements.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 CONCRETE BASES

A. Construct concrete bases of dimensions indicated but not less than 4 inches (100 mm) larger in both directions than supported unit, and so anchors will be a minimum of 10 bolt diameters from edge of the base.

B. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete or as shown on drawings. Concrete materials, reinforcement, and placement requirements are specified in DIVISION 03 SECTION "CAST-IN-PLACE CONCRETE."

C. Anchor equipment to concrete base.

1. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.
3. Install anchor bolts according to anchor-bolt manufacturer's written instructions.

3.4 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils (0.05 mm).

B. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260543 - UNDERGROUND DUCTS AND RACEWAYS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal conduits and fittings, including GRC and PVC-coated steel conduit.
2. Rigid nonmetallic duct.
3. Duct accessories.

1.3 DEFINITIONS

A. Direct Buried: Duct or a duct bank that is buried in the ground, without any additional casing materials such as concrete.

B. Duct: A single duct or multiple ducts. Duct may be either installed singly or as component of a duct bank.

C. Duct Bank:

1. Two or more ducts installed in parallel, with or without additional casing materials.
2. Multiple duct banks.

D. GRC: Galvanized rigid (steel) conduit.

E. Trafficways: Locations where vehicular or pedestrian traffic is a normal course of events.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include duct-bank materials, including spacers and miscellaneous components.
2. Include duct, conduits, and their accessories, including elbows, end bells, bends, fittings, and solvent cement.
3. Include underground-line warning tape.
4. Include warning planks.

1.5 FIELD CONDITIONS

A. Interruption of Existing Electrical Service: Do not interrupt electrical service to facilities occupied by Owner or others unless permitted under the following conditions, and then only after arranging to provide temporary electrical service according to requirements indicated:

1. Notify Construction Manager no fewer than seven days in advance of proposed interruption of electrical service.
2. Do not proceed with interruption of electrical service without Construction Manager's written permission.

B. Ground Water: Assume ground-water level is at grade level unless a lower water table is noted on Drawings.

PART 2 - PRODUCTS

2.1 METAL CONDUIT AND FITTINGS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems, Inc.
2. Alflex Inc.
3. Allied Tube & Conduit; a Tyco International Ltd. Co.
4. Anamet Electrical, Inc.; Anaconda Metal Hose.
5. Electri-Flex Co.
6. Manhattan/CDT/Cole-Flex.
7. Maverick Tube Corporation.
8. O-Z Gedney; a unit of General Signal.
9. Republic Conduit.
10. Wheatland Tube Company.

B. GRC: Comply with ANSI C80.1 and UL 6.

C. Coated Steel Conduit: PVC-coated GRC.

1. Comply with NEMA RN 1.
2. Coating Thickness: 0.040 inch (1 mm), minimum.

D. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.

2.2 RIGID NONMETALLIC DUCT

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems.
2. ARNCO Corporation.
3. Beck Manufacturing.
4. Cantex, Inc.
5. CertainTeed Corp.

6. Condux International, Inc.
7. DCX-CHOL Enterprises, Inc.; ELECSYS Division.
8. Electri-Flex Company.
9. IPEX Inc.
10. Lamson & Sessions; Carlon Electrical Products.
11. Manhattan Wire Products; a Belden company.

B. Underground Plastic Utilities Duct: Type EPC-40-PVC RNC, complying with NEMA TC 2 and UL 651, with matching fittings complying with NEMA TC 3 by same manufacturer as duct.

C. Listed and labeled as defined in NFPA 70, by a nationally recognized testing laboratory, and marked for intended location and application.

D. Solvents and Adhesives: As recommended by conduit manufacturer.

2.3 DUCT ACCESSORIES

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AFC Cable Systems.
2. ARNCO Corporation.
3. Beck Manufacturing.
4. Cantex, Inc.
5. CertainTeed Corp.
6. Condux International, Inc.
7. DCX-CHOL Enterprises, Inc.; ELECSYS Division.
8. Electri-Flex Company.
9. IPEX Inc.
10. Lamson & Sessions; Carlon Electrical Products.
11. Manhattan Wire Products; a Belden company.

B. Duct Spacers: Factory-fabricated, rigid, PVC interlocking spacers; sized for type and size of duct with which used, and selected to provide minimum duct spacing indicated while supporting duct during concreting or backfilling.

C. Underground-Line Warning Tape: Comply with requirements for underground-line warning tape specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

PART 3 - EXECUTION

3.1 PREPARATION

A. Coordinate layout and installation of ducts, and duct banks with final arrangement of other utilities, site grading, and surface features as determined in the field. Notify Architect if there is a conflict between areas of excavation and existing structures or archaeological sites to remain.

B. Coordinate elevations of duct and duct-bank entrances into manholes, handholes, and boxes with final locations and profiles of duct and duct banks, as determined by coordination with other utilities, underground obstructions, and surface features. Revise locations and elevations as required to suit field conditions and to ensure that duct and duct bank will drain to manholes and handholes, and as approved by Architect.

C. Clear and grub vegetation to be removed, and protect vegetation to remain according to Division 31 Section "SITE CLEARING." Remove and stockpile topsoil for reapplication according to Division 31 Section "SITE CLEARING."

3.2 UNDERGROUND DUCT APPLICATION

A. Duct for Electrical Feeders 600 V and Less: Type EPC-40-PVC RNC, direct-buried unless otherwise indicated.

B. Duct for Electrical Branch Circuits: Type EPC-40-PVC RNC, direct-buried unless otherwise indicated.

C. Underground Ducts Crossing Paved Paths, Walks, Driveways and Roadways: Type EPC-40 PVC RNC, encased in reinforced concrete.

D. Stub-ups: Concrete-encased PVC-coated GRC.

3.3 EARTHWORK

A. Excavation and Backfill: Comply with Division 31 Section "EARTH MOVING," but do not use heavy-duty, hydraulic-operated, compaction equipment.

B. Restoration: Replace area after construction vehicle traffic in immediate area is complete.

C. Restore surface features at areas disturbed by excavation, and re-establish original grades unless otherwise indicated. Replace removed sod immediately after backfilling is completed.

D. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching. Comply with Division 32 Section "TURF AND GRASSES" and Division 32 Section "PLANTS."

E. Cut and patch existing pavement in the path of underground duct, duct bank, and underground structures according to "Cutting and Patching" Article in Division 01 Section "EXECTION."

3.4 DUCT AND DUCT-BANK INSTALLATION

A. Where indicated on Drawings, install duct, spacers, and accessories into the duct-bank configuration shown. Duct installation requirements in this Section also apply to duct bank.

B. Install duct according to NEMA TCB 2.

C. Slope: Pitch duct a minimum slope of 1:300 down toward manholes and handholes and away from buildings and equipment. Slope duct from a high point between two manholes, to drain in both directions.

D. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches (1200 mm), both horizontally and vertically, at other locations unless otherwise indicated.

1. Duct shall have maximum of two 90 degree bends or the total of all bends shall be no more 180 degrees between pull points.

E. Joints: Use solvent-cemented joints in duct and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent duct do not lie in same plane.

F. End Bell Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use end bells, spaced approximately 10 inches (250 mm) o.c. for 5-inch (125-mm) duct, and vary proportionately for other duct sizes.

1. Begin change from regular spacing to end-bell spacing 10 feet (3 m) from the end bell, without reducing duct slope and without forming a trap in the line.
2. Expansion and Deflection Fittings: Install an expansion and deflection fitting in each duct in the area of disturbed earth adjacent to manhole or handhole. Install an expansion fitting near the center of all straight line direct-buried duct with calculated expansion of more than 3/4 inch (19 mm).
3. Grout end bells into structure walls from both sides to provide watertight entrances.

G. Terminator Entrances to Manholes and Concrete and Polymer Concrete Handholes: Use manufactured, cast-in-place duct terminators, with entrances into structure spaced approximately 6 inches (150 mm) o.c. for 4-inch (100-mm) duct, and vary proportionately for other duct sizes.

1. Begin change from regular spacing to terminator spacing 10 feet (3 m) from the terminator, without reducing duct line slope and without forming a trap in the line.
2. Expansion and Deflection Fittings: Install an expansion and deflection fitting in each duct in the area of disturbed earth adjacent to manhole or handhole. Install an expansion fitting near the center of all straight line duct with calculated expansion of more than 3/4 inch (19 mm).

H. Sealing: Provide temporary closure at terminations of duct with pulled cables. Seal spare duct at terminations. Use sealing compound and plugs to withstand at least 15-psig (1.03-MPa) hydrostatic pressure.

I. Pulling Cord: Install 200-lbf- (1000-N-) test nylon cord in empty ducts.

J. Direct-Buried Duct and Duct Bank:

1. Excavate trench bottom to provide firm and uniform support for duct. Comply with requirements in Division 31 Section "EARTH MOVING" for preparation of trench bottoms for pipes less than 6 inches (150 mm) in nominal diameter.
2. Width: Excavate trench 12 inches (300 mm) wider than duct on each side.
3. Width: Excavate trench 3 inches (75 mm) wider than duct on each side.
4. Depth: Install top of duct at least 36 inches (900 mm) below finished grade unless otherwise indicated.
5. Set elevation of bottom of duct bank below frost line.
6. Support ducts on duct spacers coordinated with duct size, duct spacing, and outdoor temperature.
7. Spacer Installation: Place spacers close enough to prevent sagging and deforming of duct, with not less than five spacers per 20 feet (6 m) of duct. Place spacers within 24 inches (600 mm) of duct ends. Stagger spacers approximately 6 inches (150 mm) between tiers. Secure spacers to earth and to ducts to prevent floating during concreting. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
8. Install duct with a minimum of 3 inches (75 mm) between ducts for like services and 6 inches (150 mm) between power and communications duct.

9. Elbows: Install manufactured duct elbows for stub-ups, at building entrances, and at changes of direction in duct direction unless otherwise indicated. Encase elbows for stub-up ducts throughout length of elbow.
10. Install manufactured PVC-coated GRC elbows for stub-ups, at building entrances, and at changes of direction in duct.

    a. Couple RNC duct to GRC with adapters designed for this purpose, and encase coupling with 3 inches (75 mm) of concrete.
    b. Stub-ups to Outdoor Equipment: Extend concrete-encased GRC horizontally a minimum of 60 inches (1500 mm) from edge of base. Install insulated grounding bushings on terminations at equipment.

        1) Stub-ups shall be flush withfinished floor and minimum 3 inches (75 mm)from conduit side to edge of slab.

    c. Stub-ups to Indoor Equipment: Extend concrete-encased GRC horizontally a minimum of 60 inches (1500 mm) from edge of wall. Install insulated grounding bushings on terminations at equipment.

        1) Stub-ups shall be minimum 4 inches (100 mm)abovefinished floor and no less than 3 inches (75 mm)from conduit side to edge of slab.

11. After installing first tier of duct, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand place backfill to 4 inches (100 mm) over duct and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction. Comply with requirements in Division 31 Section "EARTH MOVING" for installation of backfill materials.

    a. Place minimum 3 inches (75 mm) of sand as a bed for duct. Place sand to a minimum of 6 inches (150 mm) above top level of duct.
    b. Place minimum 6 inches (150 mm) of engineered fill above concrete encasement of duct.

K. Underground-Line Warning Tape: Bury conducting underground line specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS" no less than 12 inches (300 mm) above all concrete-encased duct and duct banks and approximately 12 inches (300 mm) below grade. Align tape parallel to and within 3 inches (75 mm) of centerline of duct bank. Provide an additional warning tape for each 12-inch (300-mm) increment of duct-bank width over a nominal 18 inches (450 mm). Space additional tapes 12 inches (300 mm) apart, horizontally.

3.5 GROUNDING

A. Ground underground ducts and utility structures according to Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Demonstrate capability and compliance with requirements on completion of installation of underground duct, duct bank, and utility structures.
2. Pull solid aluminum or wood test mandrel through duct to prove joint integrity and adequate bend radii, and test for out-of-round duct. Provide a minimum 12-inch- (300-mm-) long mandrel equal to duct size minus 1/4 inch (6 mm). If obstructions are indicated, remove obstructions and retest.

B. Correct deficiencies and retest as specified above to demonstrate compliance.

C. Prepare test and inspection reports.

3.7 CLEANING

A. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of duct until duct cleaner indicates that duct is clear of dirt and debris. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.

B. Clean internal surfaces of manholes, including sump.

1. Sweep floor, removing dirt and debris.
2. Remove foreign material.

END OF SECTION 260543

SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Color and legend requirements for conductors, and warning labels and signs.
2. Tapes.
3. Signs.
4. Fasteners for labels and signs.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Comply with ASME A13.1 and IEEE C2.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

2.2 COLOR AND LEGEND REQUIREMENTS

A. Color-Coding for Phase- and Voltage-Level Identification, 600 V or Less: Use colors listed below for ungrounded service feeder and branch-circuit conductors.

1. Color shall be factory applied.
2. Colors for 208/120-V Circuits:

    a. Phase A: Black.
    b. Phase B: Red.
    c. Phase C: Blue.

3. Colors for 240-V Circuits:

    a. Phase A: Black.

b. Phase B: Red.

4. Colors for 480/277-V Circuits:

a. Phase A: Brown.
b. Phase B: Orange.
c. Phase C: Yellow.

5. Color for Neutral: White or gray.
6. Color for Equipment Grounds: Bare copper, Green or Green with a yellow stripe.
7. Colors for Isolated Grounds: Green with white stripe.

B. Warning labels and signs shall include, but are not limited to, the following legends:
1. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES (915 MM)."
2. All warning information required by NFPA 70 and NFPA 70E

C. Equipment Identification Labels:

1. Black letters on a white field unless otherwise noted.
2. Refer to typical details shown on Drawings for labeling layout and information required.

2.3 TAPES

A. Underground-Line Warning Tape:
1. Tape:

a. Recommended by manufacturer for the method of installation and suitable to identify and locate underground electrical and communications utility lines.
b. Printing on tape shall be permanent and shall not be damaged by burial operations.
c. Tape material and ink shall be chemically inert and not subject to degradation when exposed to acids, alkalis, and other destructive substances commonly found in soils.

2. Color and Printing:

a. Comply with ANSI Z535.1, ANSI Z535.2, ANSI Z535.3, ANSI Z535.4, and ANSI Z535.5.
b. Inscriptions for Red-Colored Tapes: "ELECTRIC LINE, HIGH VOLTAGE".
c. Inscriptions for Orange-Colored Tapes: "TELEPHONE CABLE, CATV CABLE, COMMUNICATIONS CABLE, OPTICAL FIBER CABLE".
d. Detectable three-layer laminate, consisting of a printed pigmented polyolefin film, a solid aluminum-foil core, and a clear protective film that allows inspection of the continuity of the conductive core; bright colored,compounded for direct-burial service.
e. Width: 3 inches (75 mm).
f. Overall Thickness: 5 mils (0.125 mm).
g. Foil Core Thickness: 0.35 mil (0.00889 mm).
h. Weight: 28 lb/1000 sq. ft. (13.7 kg/100 sq. m).
i. Tensile according to ASTM D 882: 70 lbf (311.3 N) and 4600 psi (31.7 MPa).

2.4 SIGNS

A. Laminated Acrylic or Melamine Plastic Signs:
   1. Engraved legend.
   2. Thickness:

      a. For signs up to 20 sq. in. (129 sq. cm), minimum 1/16 inch (1.6 mm) thick.
      b. For signs larger than 20 sq. in. (129 sq. cm), 1/8 inch (3.2 mm) thick.
      c. Engraved legend with finishes noted on Drawings.
      d. Punched or drilled for mechanical fasteners with 1/4-inch (6.4-mm) grommets in corners for mounting or Self-adhesive.
      e. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

2.5 MISCELLANEOUS IDENTIFICATION PRODUCTS

A. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

PART 3 - EXECUTION

3.1 PREPARATION

A. Self-Adhesive Identification Products: Before applying electrical identification products, clean substrates of substances that could impair bond, using materials and methods recommended by manufacturer of identification product.

3.2 INSTALLATION

A. Verify and coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and operation and maintenance manual. Use consistent designations throughout Project.

B. Install identifying devices before installing acoustical ceilings and similar concealment.

C. Verify identity of each item before installing identification products.

D. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and operation and maintenance manual.

E. Apply identification devices to surfaces that require finish after completing finish work.

F. Install signs with approved legend to facilitate proper identification, operation, and maintenance of electrical systems and connected items.

G. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

H. Elevated Components: Increase sizes of labels, signs, and letters to those appropriate for viewing from the floor.

I. Underground Line Warning Tape:

1. During backfilling of trenches, install continuous underground-line warning tape directly above cable or raceway at 6 to 8 inches (150 to 200 mm) below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches (400 mm) overall.
2. Limit use of underground-line warning tape to direct-buried cables.
3. Install underground-line warning tape for direct-buried cables and cables in raceways.

J. Laminated Acrylic or Melamine Plastic Signs:

1. Attach signs that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
2. Unless otherwise indicated, provide a single line of text with 1/2-inch- (13-mm-) high letters on 1-1/2-inch- (38-mm-) high sign; where two lines of text are required, use labels 2 inches (50 mm) high.

3.3 IDENTIFICATION SCHEDULE

A. Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment. Install access doors or panels to provide view of identifying devices.

B. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, pull points, and locations of high visibility. Identify by system and circuit designation.

C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use self-adhesive wraparound labels and self-adhesive vinyl tape to identify the phase.

1. Locate identification at changes in direction, at penetrations of walls and floors, at 50-foot (15-m) maximum intervals in straight runs, and at 25-foot (7.6-m) maximum intervals in congested areas.

D. Control-Circuit Conductor Identification: For conductors and cables in pull and junction boxes, manholes, and handholes, use self-adhesive labels with the conductor or cable designation, origin, and destination.

E. Control-Circuit Conductor Termination Identification: For identification at terminations, provide self-adhesive labels with the conductor designation.

F. Conductors to Be Extended in the Future: Attach marker tape to conductors and list source.

G. Auxiliary Electrical Systems Conductor Identification: Marker tape that is uniform and consistent with system used by manufacturer for factory-installed connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.

H. Locations of Underground Lines: Underground-line warning tape for power, lighting, communication, and control wiring and optical-fiber cable.

I. Instructional Signs: Self-adhesive labels, including the color code for grounded and ungrounded conductors.

J. Arc Flash Warning Labeling: Self-adhesive labels.

K. Equipment Identification Labels:

1. Indoor Equipment: Laminated acrylic or melamine plastic sign.
2. Outdoor Equipment: Laminated acrylic or melamine sign.
3. Equipment to Be Labeled:
   a. Enclosures and electrical cabinets.
   b. Switchboards.
   c. Transformers: Label that includes tag designation indicated on Drawings for the transformer, feeder, and panelboards or equipment supplied by the secondary.
   d. Enclosed circuit breakers.

END OF SECTION 260553

SECTION 261200 - MEDIUM-VOLTAGE TRANSFORMERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following types of transformers with medium-voltage primaries:
   1. Pad-mounted, liquid-filled transformers.

1.3 DEFINITIONS

A. NETA ATS: Acceptance Testing Specification.

1.4 SUBMITTALS

A. Product Data: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, location of each field connection, and performance for each type and size of transformer indicated.

B. Shop Drawings: Diagram power wiring.

C. Qualification Data: For testing agency.

D. Source quality-control test reports.

E. Field quality-control test reports.

F. Follow-up service reports.

G. Operation and Maintenance Data: For transformer and accessories to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the InterNational Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.

   1. Testing Agency's Field Supervisor: Person currently certified by the InterNational Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

C. Comply with IEEE C2.

D. Comply with ANSI C57.12.10, ANSI C57.12.28, IEEE C57.12.70, and IEEE C57.12.80.

E. Comply with NFPA 70.

1.6 PROJECT CONDITIONS

A. Service Conditions: IEEE C37.121, usual service conditions except for the following:

1.7 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified in Division 03.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Cooper Industries; Cooper Power Systems Division.
2. Federal Pacific Transformer Company; Division of Electro-Mechanical Corp.
3. Hammond Manufacturing; Transformer Group.
4. Siemens Energy & Automation, Inc.

2.2 PAD-MOUNTED, LIQUID-FILLED TRANSFORMERS

A. Description: ANSI C57.12.13, IEEE C57.12.00, pad-mounted, 2-winding transformers.

B. Insulating Liquid: Less flammable, dielectric, and UL listed as complying with NFPA 70 requirements for fire point of not less than 300 deg C when tested according to ASTM D 92. Liquid shall be biodegradable and nontoxic.

C. Insulation Temperature Rise: 65 deg C when operated at rated kVA output in a 40 deg C ambient temperature. Transformer shall be rated to operate at rated kilovolt ampere in an average ambient temperature of 30 deg C over 24 hours with a maximum ambient temperature of 40 deg C without loss of service life expectancy.

D. Basic Impulse Level: 95 kV.

E. Full-Capacity Voltage Taps: Four 2.5 percent taps, 2 above and 2 below rated high voltage; with externally operable tap changer for de-energized use and with position indicator and padlock hasp.

F. High-Voltage Switch: 200 A, make-and-latch rating of 10-kA RMS, symmetrical, arranged for loop feed with 3-phase, 4-position, gang-operated, load-break switch that is oil immersed in transformer tank with hook-stick operating handle in primary compartment.

G. Primary Fuses: 150-kV fuse assembly with fuses complying with IEEE C37.47.
1. Bay-O-Net liquid-immersed fuses in series with liquid-immersed current-limiting fuses. Bay-O-Net fuses shall be externally replaceable without opening transformer tank.

H. Surge Arresters: Distribution class, one for each primary phase; complying with IEEE C62.11 and NEMA LA 1; support from tank wall within high-voltage compartment. Transformers shall have six arresters for loop-feed circuits.

I. High-Voltage Terminations and Equipment: Dead front with universal-type bushing wells for dead-front bushing-well inserts, complying with IEEE 386 and including the following:

1. Bushing-Well Inserts: One for each high-voltage bushing well.
2. Surge Arresters: Dead-front, elbow-type, metal-oxide-varistor units.
3. Parking Stands: One for each high-voltage bushing well.
4. Portable Insulated Bushings: Arranged for parking insulated, high-voltage, load-break cable terminators; one for each primary feeder conductor terminating at transformer.

J. Accessories:

1. Drain Valve: 1 inch (25 mm), with sampling device.
2. Dial-type thermometer.
3. Liquid-level gage.
4. Pressure-vacuum gage.
5. Pressure Relief Device: Self-sealing with an indicator.
6. Mounting provisions for low-voltage current transformers.
7. Mounting provisions for low-voltage potential transformers.

2.3 IDENTIFICATION DEVICES

A. Nameplates: Engraved, laminated-plastic or metal nameplate for each transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

2.4 SOURCE QUALITY CONTROL

A. Factory Tests: Perform design and routine tests according to standards specified for components. Conduct transformer tests according to IEEE C57.12.90.

B. Factory Tests: Perform the following factory-certified tests on each transformer:

1. Resistance measurements of all windings on rated-voltage connection and on tap extreme connections.
2. Ratios on rated-voltage connection and on tap extreme connections.
3. Polarity and phase relation on rated-voltage connection.
4. No-load loss at rated voltage on rated-voltage connection.
5. Excitation current at rated voltage on rated-voltage connection.
6. Impedance and load loss at rated current on rated-voltage connection and on tap extreme connections.
7. Applied potential.

8. Induced potential.
9. Temperature Test: If transformer is supplied with auxiliary cooling equipment to provide more than one rating, test at lowest kilovolt-ampere Class OA or Class AA rating and highest kilovolt-ampere Class OA/FA or Class AA/FA rating.

    a. Temperature test is not required if record of temperature test on an essentially duplicate unit is available.

10. Owner will witness all required factory tests. Notify Architect at least 14 days before date of tests and indicate their approximate duration.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for medium-voltage transformers.

B. Examine roughing-in of conduits and grounding systems to verify the following:

1. Wiring entries comply with layout requirements.
2. Entries are within conduit-entry tolerances specified by manufacturer and no feeders will have to cross section barriers to reach load or line lugs.

C. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.

D. Verify that ground connections are in place and that requirements in Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS" have been met. Maximum ground resistance shall be 5 ohms at location of transformer.

E. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install transformers on concrete bases.

1. Anchor transformers to concrete bases according to manufacturer's written instructions, seismic codes at Project, and requirements in Division 26 Section "HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS."
2. Construct concrete bases of dimensions indicated, but not less than 4 inches (100 mm) larger in both directions than supported unit and 6 inches (150 mm) high.
3. Use 3000-psi (20.7-MPa), 28-day compressive-strength concrete and reinforcement as specified.
4. Install dowel rods to connect concrete bases to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around full perimeter of base.
5. Install epoxy-coated anchor bolts, for supported equipment, that extend through concrete base and anchor into structural concrete floor.
6. Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

7. Tack-weld or bolt transformers to channel-iron sills embedded in concrete bases. Install sills level and grout flush with floor or base.

B. Maintain minimum clearances and workspace at equipment according to manufacturer's written instructions and NFPA 70.

3.3 IDENTIFICATION

A. Identify field-installed wiring and components and provide warning signs as specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.4 CONNECTIONS

A. Ground equipment according to Division 26 Section "GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS."

B. Connect wiring according to Division 26 Section "LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES."

3.5 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust field-assembled components and equipment installation, including connections, and to assist in field testing. Report results in writing.

B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

C. Testing Agency: Engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:

D. Perform the following field tests and inspections and prepare test reports:

1. After installing transformers but before primary is energized, verify that grounding system at substation is tested at specified value or less.
2. After installing transformers and after electrical circuitry has been energized, test for compliance with requirements.
3. Perform visual and mechanical inspection and electrical test stated in NETA ATS. Certify compliance with test parameters.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Remove and replace malfunctioning units and retest as specified above.

F. Test Reports: Prepare written reports to record the following:

1. Test procedures used.
2. Test results that comply with requirements.
3. Test results that do not comply with requirements and corrective actions taken to achieve compliance with requirements.

END OF SECTION 261200

SECTION 262413 - SWITCHBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Service and distribution switchboards rated 600 V and less.
2. Surge protection devices.
3. Disconnecting and overcurrent protective devices.
4. Accessory components and features.
5. Identification.

1.3 ACTION SUBMITTALS

A. Product Data: For each switchboard, overcurrent protective device, surge protection device, ground-fault protector, accessory, and component.

1. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.

B. Shop Drawings: For each switchboard and related equipment.

1. Include dimensioned plans, elevations, sections, and details, including required clearances and service space around equipment. Show tabulations of installed devices, equipment features, and ratings.
2. Detail enclosure types for types other than NEMA 250, Type 1.
3. Detail bus configuration, current, and voltage ratings.
4. Detail short-circuit current rating of switchboards and overcurrent protective devices.
5. Include descriptive documentation of optional barriers specified for electrical insulation and isolation.
6. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices and auxiliary components.
7. Include time-current coordination curves for each type and rating of overcurrent protective device included in switchboards. Include selectable ranges for each type of overcurrent protective device.
8. Include schematic and wiring diagrams for power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Seismic Qualification Data: Certificates, for switchboards, overcurrent protective devices, accessories, and components, from manufacturer.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.

B. Field Quality-Control Reports:

1. Test procedures used.
2. Test results that comply with requirements.
3. Results of failed tests and corrective action taken to achieve test results that comply with requirements.

C. Field quality-control and test reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For switchboards and components to include in emergency, operation, and maintenance manuals.

1. In addition to items specified in Division 01 Section "OPERATION AND MAINTENANCE DATA," include the following:

a. Routine maintenance requirements for switchboards and all installed components.
b. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

2. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An employer of workers qualified as defined in NEMA PB 2.1 and trained in electrical safety as required by NFPA 70E.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.

B. Remove loose packing and flammable materials from inside switchboards and install temporary electric heating (250 W per section) to prevent condensation.

C. Handle and prepare switchboards for installation according to NEMA PB 2.1.

1.8 FIELD CONDITIONS

A. Installation Pathway: Remove and replace access fencing, doors, lift-out panels, and structures to provide pathway for moving switchboards into place.

B. Environmental Limitations:
1. Rate equipment for continuous operation under the following conditions unless otherwise indicated:

a. Ambient Temperature: Not exceeding 104 deg F (40 deg C).
b. Altitude: Not exceeding 6600 feet (2000 m).
c. Interruption of Existing Electric Service: Do not interrupt electric service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary electric service according to requirements indicated:

1) Notify Construction Manager no fewer than seven days in advance of proposed interruption of electric service.
2) Indicated method of providing temporary electric service.
3) Do not proceed with interruption of electric service without Construction Manager's written permission.
4) Comply with NFPA 70E.

1.9 COORDINATION

A. Coordinate layout and installation of switchboards and components with other construction. Maintain required workspace clearances and required clearances for equipment access doors and panels.

B. Coordinate sizes and locations of concrete bases with actual equipment provided. Cast anchor-bolt inserts into bases. Concrete, reinforcement, and formwork requirements are specified with concrete.

1.10 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to repair or replace switchboard enclosures, buswork, overcurrent protective devices, accessories, and factory installed interconnection wiring that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion.

B. Manufacturer's Warranty: Manufacturer's agrees to repair or replace surge protection devices that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Switchboards shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation. Shake-table testing shall comply with ICC-ES AC156.
2. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

2.2 MANUFACTURED UNITS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Square D; a brand of Schneider Electric or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial – Electrical Distribution.
3. Siemens Energy & Automation, Inc.

B. Source Limitations: Obtain switchboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.

2.3 SWITCHBOARDS

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NEMA PB 2.

C. Comply with NFPA 70.

D. Comply with UL 891.

E. Front-Connected, Front-Accessible Switchboards:

1. Main Devices: Fixed, individually mounted.
2. Branch Devices: Panel mounted.
3. Sections front and rear aligned.

F. Nominal System Voltage: 208Y/120 V.

G. Main-Bus Continuous: 800 A.

H. Seismic Requirements: Fabricate and test switchboards according to IEEE 344 to withstand seismic forces defined in Division 26 Section "VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS."

1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation. Shake-table testing shall comply with ICC-ES AC156.
    a. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

I. Outdoor Enclosures: Type 3R.

1. Finish: Factory-applied finish in manufacturer's standard color; undersurfaces treated with corrosion-resistant undercoating.
2. Enclosure: Downward, rearward sloping roof; bolt-on rear covers for each section, with provisions for padlocking.
3. Power for Space Heaters, Ventilation, Lighting, and Receptacle: Include a control-power transformer, with spare capacity of 25 percent, within the switchboard. Supply voltage shall be 120/208 V ac.

J. Barriers: Between adjacent switchboard sections.

K. Insulation and isolation for main bus of main section and main and vertical buses of feeder sections.

L. Service Entrance Rating: Switchboards intended for use as service entrance equipment shall contain from one to six service disconnecting means with overcurrent protection, a neutral bus with disconnecting link, a grounding electrode conductor terminal, and a main bonding jumper.

M. Bus Transition and Incoming Pull Sections: Matched and aligned with basic switchboard.

N. Hinged Front Panels: Allow access to circuit breaker, metering, accessory, and blank compartments.

O. Buses and Connections: Three phase, four wire unless otherwise indicated.

1. Provide phase bus arrangement A, B, C from front to back, top to bottom, and left to right when viewed from the front of the switchboard.
2. Phase- and Neutral-Bus Material: Hard-drawn copper of 98 percent conductivity, silver-plated.
3. Copper feeder circuit-breaker line connections.
4. Load Terminals: Insulated, rigidly braced, runback bus extensions, of same material as through buses, equipped with compression connectors for outgoing circuit conductors. Provide load terminals for future circuit-breaker positions at full-ampere rating of circuit-breaker position.
5. Ground Bus: Minimum-size required by UL 891, hard-drawn copper of 98 percent conductivity, equipped with compression connectors for feeder and branch-circuit ground conductors.
6. Main-Phase Buses and Equipment-Ground Buses: Uniform capacity for entire length of switchboard's main and distribution sections. Provide for future extensions from both ends.
7. Disconnect Links:

    a. Isolate neutral bus from incoming neutral conductors.
    b. Bond neutral bus to equipment-ground bus for switchboards utilized as service equipment or separately derived systems.
8. Neutral Buses: 100 percent of the ampacity of phase buses unless otherwise indicated, equipped with compression connectors for outgoing circuit neutral cables.

9. Isolation Barrier Access Provisions: Permit checking of bus-bolt tightness.

P. Future Devices: Equip compartments with mounting brackets, supports, bus connections, and appurtenances at full rating of circuit-breaker compartment.

Q. Bus-Bar Insulation: Factory-applied, flame-retardant, tape wrapping of individual bus bars or flame-retardant, spray-applied insulation. Minimum insulation temperature rating of 105 deg C.

2.4 SURGE PROTECTION DEVICES

A. Basis-of-Design Product: Subject to compliance with requirements, provide Square D; a brand of Schneider Electric or comparable product by one of the following:

1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
2. General Electric Company; GE Consumer & Industrial – Electrical Distribution.
3. Siemens Energy & Automation, Inc.

B. SPDs: Comply with UL 1449, Type 2.

C. Features and Accessories:

1. Integral disconnect switch.
2. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
3. Indicator light display for protection status.
4. Form-C contacts rated at 2 A and 24-V ac, one normally open and one normally closed, for remote monitoring of protection status. Contacts shall reverse on failure of any surge diversion module or on opening of any current-limiting device. Coordinate with building power monitoring and control system.
5. Surge counter.

D. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per phase shall not be less than 320 kA per phase. The peak surge current rating shall be the arithmetic sum of the ratings of the individual MOVs in a given mode.

E. Protection modes and UL 1449 VPR for grounded wye circuits with 208Y/120 V, three-phase, four-wire circuits shall not exceed the following:

1. Line to Neutral: 700 V for 208Y/120 V.
2. Line to Ground: 1200 V for 208Y/120 V.
3. Line to Line: 1000 V for 208Y/120 V.

F. SCCR: Equal or exceed 100 kA.

G. Nominal Rating: 20 kA.

2.5 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

A. Molded-Case Circuit Breaker (MCCB): Comply with UL 489, with interrupting capacity to meet available fault currents.
1. Electronic trip circuit breakers with rms sensing; field-replaceable rating plug or field-replicable electronic trip; and the following field-adjustable settings:

a. Instantaneous trip.
b. Long- and short-time pickup levels.
c. Long and short time adjustments.

2. MCCB Features and Accessories:

a. Standard frame sizes, trip ratings, and number of poles.
b. Lugs: Compression style, suitable for number, size, trip ratings, and conductor material.
c. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge (HID) lighting circuits.
d. Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
e. Zone-Selective Interlocking: Integral with electronic trip unit; for interlocking ground-fault protection function.
f. Shunt Trip: 120-V trip coil energized from separate circuit, set to trip at 75 percent of rated voltage.
g. Undervoltage Trip: Set to operate at 35 to 75 percent of rated voltage without intentional time delay.
h. Key Interlock Kit: Externally mounted to prohibit circuit-breaker operation; key shall be removable only when circuit breaker is in off position.

2.6 IDENTIFICATION

A. Service Equipment Label: NRTL labeled for use as service equipment for switchboards with one or more service disconnecting and overcurrent protective devices.

PART 3 - EXECUTION

3.1 DELIVERY, STORAGE, AND HANDLING

A. Deliver switchboards in sections or lengths that can be moved past obstructions in delivery path.

B. Remove loose packing and flammable materials from inside switchboards.

C. Handel and prepare switchboards for installation according to NEMA PB 2.1.

3.2 EXAMINATION

A. Receive, inspect, handle, and store switchboards according to NEMA PB 2.1.

1. Lift or move switchboards with spreader bars and manufacturer-supplied lifting straps following manufacturer's instructions.
2. Use rollers, slings, or other manufacturer-approved methods if lifting straps are not furnished.
3. Protect from moisture, dust, dirt, and debris during storage and installation.
4. Install temporary heating during storage per manufacturer's instructions.

B. Examine switchboards before installation. Reject switchboards that are moisture damaged or physically damaged.

C. Examine elements and surfaces to receive switchboards for compliance with installation tolerances and other conditions affecting performance of the Work or that affect the performance of the equipment.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 INSTALLATION

A. Install switchboards and accessories according to NEMA PB 2.1.

B. Equipment Mounting: Install switchboards on concrete base. Comply with requirements for concrete base specified in Division 03 Section "CAST-IN-PLACE CONCRETE."

1. Install conduits entering underneath the switchboard, entering under the vertical section where the conductors will terminate. Install with couplings flush with the concrete base. Extend 2 inches (50-mm) above concrete base after switchboard is anchored in place.
2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.
3. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
4. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
5. Install anchor bolts to elevations required for proper attachment to switchboards.
6. Anchor switchboard to building structure at the top of the switchboard if required or recommended by the manufacturer.

C. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, straps and brackets, and temporary blocking of moving parts from switchboard units and components.

D. Install filler plates in unused spaces of panel-mounted sections.

E. Install overcurrent protective devices, surge protection devices, and instrumentation.

1. Set field-adjustable switches and circuit-breaker trip ranges.

F. Comply with NECA 1.

3.4 CONNECTIONS

A. Bond conduits entering underneath the switchboard to the equipment ground bus with a bonding conductor sized per NFPA 70.

B. Support and secure conductors within the switchboard according to NFPA 70.

C. Extend insulated equipment grounding cable to busway ground connection and support cable at intervals in vertical run.

3.5 IDENTIFICATION

A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

B. Switchboard Nameplates: Label each switchboard compartment with a nameplate complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

C. Device Nameplates: Label each disconnecting and overcurrent protective device and each meter and control device mounted in compartment doors with a nameplate complying with requirements for identification specified in Division 26 Section "IDENTIFICATION FOR ELECTRICAL SYSTEMS."

3.6 FIELD QUALITY CONTROL

A. Perform the following tests and inspections with the assistance of a factory-authorized service representative:

1. Acceptance Testing:

    a. Test insulation resistance for each switchboard bus, component, connecting supply, feeder, and control circuit. Open control and metering circuits within the switchboard, and remove neutral connection to surge protection and other electronic devices prior to insulation test. Reconnect after test.
    b. Test continuity of each circuit.

2. Test ground-fault protection of equipment for service equipment per NFPA 70.
3. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
4. Correct malfunctioning units on-site where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

B. Switchboard will be considered defective if it does not pass tests and inspections.

3.7 ADJUSTING

A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

3.8 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain switchboards, overcurrent protective devices, instrumentation, and accessories, and to use and reprogram microprocessor-based trip, monitoring, and communication units.

END OF SECTION 262413

SECTION 328400

PLANTING IRRIGATION

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes
1. Pipe and fittings, valves, accessories, and connections to water source.
2. Control system.

1.2 DEFINITIONS

A. Pipe sizes used in this Section are nominal pipe size (NPS) in inches. Tube sizes are Standard size in inches.

B. Pressure Piping Main Line: Piping downstream from supply piping to and including control valves. Piping is under irrigation system pressure. Piping in this category includes backflow preventers.

C. Circuit Piping Lateral Lines: Piping downstream from control valves to irrigation system sprinklers. Piping is under pressure (less than pressure piping) during flow.

D. Control Valve: Automatic (electrically operated) valve for control water flow to irrigation system zone.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Location of Sprinklers and Devices: Design location is approximate. Make minor adjustments necessary to avoid plantings and obstructions such as signs and light standards.

B. Minimum Water Coverage: Not less than:
1. Turf Areas: 100 percent.
2. Other Planting Areas: 100 percent.

C. All flow velocities, within the entire irrigation system, shall not exceed 5 feet per second.

1.4 SUBMITTALS

A. Product data including pressure rating, rated capacity, settings, and electrical data of selected models for the following:
1. Valves, including general-duty, underground, automatic control, and quick-coupler types, isolation and valve boxes
2. Controls, including controller wiring diagrams
3. Wiring
4. Irrigation system record drawings

5. Central control system

B. Wiring diagrams for electrical controllers, valves, and devices. Valve numbers shall reflect station numbers within the controller and shall be noted on the as builts.

C. Maintenance data for inclusion in "Operating and Maintenance Manual" specified in Division 1 Section "Contract Closeout" for the following:
1. Seasonal activities of start-up, shut-down and winterization, including blow-out operation of sprinkler system with compressed air
2. Automatic control valves
3. Controllers
4. Irrigation system record drawings
5. Central control system
6. Remote Control

1.5 QUALITY ASSURANCE

A. Comply with requirements of utility supplying water for prevention of backflow and backsiphonage. Comply with appropriated water rights.

B. Installer Qualifications: Engage an experienced Installer with a minimum of five years experience and who has completed irrigation systems similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.

C. Listing/Approval Stamp, Label, or Other Marking: On equipment, specialties, and accessories made to specified standards**.**

D. Listing and Labeling: Equipment, specialties, and accessories that are listed and labeled.
1. The Terms "Listed" and "Labeled": As defined in "National Electrical Code," Article 100.
2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" (NRTL) as defined in OSHA Regulation 1910.7.

E. Product Options: Irrigation system piping, specialties, and accessories are based on specific types, manufacturers, and models indicated. Components with equal performance characteristics produced by other manufacturers may be considered, provided deviations in dimensions, operation, and other characteristics do not change design concept or intended performance as judged by the Engineer. The burden of proof of product equality is on the Contractor. Any substitutions must be approved by the Engineer in writing prior to installation.

1.6 PROJECT CONDITIONS

A. Perform site survey, research public utility records, and verify existing utility locations. Verify that irrigation system piping may be installed in compliance with original design and referenced standards.

1.7 SEQUENCING AND SCHEDULING

A. Maintain uninterrupted water service to buildings during normal working hours. Arrange for temporary water shutoff with Owner.

B. Maintain Uninterrupted existing irrigation system during construction. Arrange for temporary water shutoff with owner. Provide alternate water source for irrigation if water is to be shut off for more than (48) hours.

C. Coordinate irrigation systems work with landscape work specified in Division 32 Section "Turf & Grasses".

1.8 EXTRA MATERIALS

A. Deliver extra materials to Owner. Furnish extra materials matching products installed as described below. Package them with protective covering for storage and label clearly describing contents.

1. Quick Couplers: Furnish quantity of units equal to 2 percent of amount of each size installed.
2. Valve Keys: Furnish quantity of tee-handle units equal to 5 percent of amount of each type key-operated, control valve installed.
3. Quick-Coupler Hose Swivels: Furnish one for each quick coupler installed.
4. Quick-Coupler Operating Keys: Furnish one for each quick coupler installed.
5. Drip Emitters: quantity of units equal to 2 percent of amount of each type installed.

1.9 IRRIGATION RECORD DRAWINGS

A. Record accurately, on one set of black and white prints of the site plan, all installed work including both pressure and non-pressure lines and pipe sizes.

B. Upon completion of each increment of work, transfer all such information and dimensions to the print. The dimensions shall be recorded in a legible and workmanlike manner. Maintain as-built drawings on site at all times. Make all notes on drawing in pencil (no ball point pen). When the work has been completed, transfer all information from the field record print to a set of reproducible drawings.

C. Dimension from two permanent points of reference (buildings, monuments, sidewalks, curbs, pavements, etc.). Locations shown on as-built drawings shall be kept day to day as the project is being installed. All dimensions noted on drawings shall be 1/8 inch in size (minimum).

D. Show locations and depths of the following items:

1. Point of connection, including Flow Sensor Assembly
2. Routing of sprinkler pressure lines
3. Gate valves
4. Sprinkler control valves
5. Quick coupling valves
6. Routing of control wires, including Flow Sensor Assembly wires
7. Sprinkler heads
8. Other related equipment

1.10 SUBSTITUTIONS

A. Coordinate substitutions per Division One.

B. Substitutions to the specified equipment will be permitted with the express written approval of the Engineer. Substitutions will be approved only when the substituted item is equivalent or better in quality and performance than the item originally specified. The final determination for "equivalents" rests with the Engineer. Their decision shall be final and binding.

1.11 WARRANTY

A. Warranty system against defects of installation and material for a period of 1 year after final completion of the irrigation system. Guarantee shall also cover repair or damage to any part of the premises resulting from leaks or other defects in material, equipment and workmanship to the satisfaction of the Engineer. Repairs, if required, shall be done promptly upon notification by the Owner, and, at no cost to the Owner.

B. As part of the warranty, the Contractor shall be responsible for deactivating and winterizing the system prior to the onset of the freezing season and for reactivating the system at the onset of the spring growing season; each event must be accomplished once during the warranty period. In the event the system is completed in a season when it will not be in use, the Contractor shall winterize the system upon completion of testing (and approval by the Engineer) and reactivate the system in the spring. The Contractor shall SUBMIT a letter to the Engineer certifying that the system was winterized and drained and indicate the date such action was accomplished. The Contractor shall be responsible for any damage resulting from failure to comply. Contractor shall instruct and demonstrate winterization and startup techniques for Owner.

PART 2 - PRODUCTS

2.1 SUMMARY

A. All materials used throughout the system shall be new, unused, and in perfect condition. Refer to the irrigation materials legend, notes, detail drawings and these specifications for specific equipment to be used. Equipment or materials installed or furnished without prior approval of the Engineer may be rejected and the Contractor required to remove such materials from the site at his own expense.

B. Substitutions: Under provisions of Division 1.

2.2 BRASS PIPE AND ACCESSORIES

A. Pipe: ASTM B43, Schedule 40; domestic manufacture

B. Fittings: Medium brass, screwed, 125-pound class.

2.3 PLASTIC PIPE AND ACCESSORIES

A. Pipe

1. Pipe walls shall be uniform, smooth, glossy, and free of interior or exterior extrusion marks; pre-belled or straight to receive solvent-weld couplings; 20 foot standard lengths.
2. Pipe shall be marked with manufacturer's name, class of pipe, NSF seal, and date/shift of manufacturing run.
3. PVC Pipe: ASTM D1785, D2241

B. Fittings: PVC - ASTM D2464, D2466.

C. Irrigation System Plastic Pipe

1. Mainline: 3 inch pipe and larger: PVC class 200 with SDR26 rubber gasket fittings.
2. 2 ½ inch pipe and smaller: PVC schedule 40 pipe with SDR21 solvent weld fittings.
3. Laterals: 2 ½ inch pipe and smaller: PVC schedule 40 pipe with SDR21 solvent weld fittings.
4. Sleeving: ASTM D 1785, Schedule 40, polyvinyl chloride (PVC) plastic pipe; ASTM D 2466, Schedule 40, PVC plastic, socket-type fittings; and solvent-cemented joints.
5. Refer to Part 3 Article "Piping Applications" for identification of systems where pipe and tube materials specified below are used.
6. Polyvinyl Chloride (PVC) Plastic Pipe: ASTM D 1785; PVC 1120, SDR 21, 200 psig (1380 kPa) minimum pressure rating, with plain ends. Schedule 40 upstream from controls, as noted on the drawings; Schedule 40 downstream.

D. Pipe and Tube Fittings

1. Refer to Part 3 Article "Piping Applications" for identification of systems where pipe and tube fitting materials specified below are used.
2. Polyvinyl Chloride (PVC) Plastic Pipe Fittings: ASTM D 2464, Schedule 80,
3. threaded.
4. Polyvinyl Chloride (PVC) Plastic Pipe Fittings: ASTM D 2467, Schedule 40, socket-type.
5. “Leemco” Push-on joint Ductile Fittings: for all pipes 3” and larger.
6. Dielectric Fittings: Assembly or fitting with insulating material isolating joined dissimilar metals to prevent galvanic action and stop corrosion. These devices are a combination of copper alloy and ferrous metal; threaded- and solder-end types, matching piping system materials.
    a. Dielectric Unions: Factory-fabricated, union assembly, designed for 250 psig (1725 kPa) minimum working pressure at 180 deg F (82 deg C). Include insulating material isolating dissimilar metals and ends with inside threads according to ASME B1.20.1.
    b. Transition Fittings: Manufactured assembly or fitting, with pressure rating at least equal to that of system and with ends

2.4 JOINING MATERIALS

A. Solvent Cement: ASTM F 656 primer and ASTM D 2564 solvent cement in color other than orange.

2.5 VALVES

A. General: Valves are for general-duty and underground applications. Refer to "Valve Applications" Article for locations of various valve types specified in this Article. Refer to "Control Valves" Article for control valves and accessories.

2.6 CONTROL VALVES

A. Description: Manufacturer's standard control valves for circuits, of type and size indicated on Drawing, and as follows:

1. Angle Valves: Bronze construction, non-rising stem, inside screw threaded ends and as noted on the Drawings.
2. Automatic Control Valves: Diaphragm-type, normally closed, with manual flow adjustment, and operated by 24-volt-a.c. solenoid.
3. Quick-Couplers: Factory-fabricated, 2-piece assembly. Include coupler water-seal valve; removable upper body with spring-loaded or weighted, rubber-covered cap; hose swivel with ASME B1.20.7, 3/4-11.5NH threads for garden hose on outlet; and operating key.
   a. Locking Top : Include vandal-resistant, locking feature with 2 matching keys.
4. Isolation Gate Valves: 150# gate valve, epoxy-coated, ductile iron, resilient wedge valve with non-rising stem and inside screw with threaded ends. Mechanical joint or push-on. “Waterous”, “American Flow Control” or “Nibco” gate valves or approved equal prior to bidding. Size to match line size. Install in valve box, size adequate for maintenance access. Minimum 15” x 21”.
5. “Leemco” Ductile Iron Lateral Connection System.

B. Control Valve Boxes and Cover: Thermo-plastic valve boxes with lockable, snap-top lids. Size as required for application or as noted on drawings, maximum one (1) valve per box. All boxes shall have purple lids labeled “DO NOT DRINK” in English and Spanish.

1. Drainage Backfill: Cleaned gravel or crushed stone, graded from 3 inches (75 mm) maximum to 3/4 inch (19 mm) minimum. Cover gravel with layer of filter fabric.

C. Service Boxes for Key-Operated Control Valves: Size and type as shown on Drawings.

1. Include valve key, 48 inches (915 mm) long with tee handle and key end to fit valve.

D. Irrigation System Controls

1. Controller: As noted on the Drawings. All control wires that are above ground shall be installed in conduit. Electrical wiring shall be installed according to local code. Provide surge protectors install controllers.
2. Controller Housing: Weatherproof, watertight, with lockable access door.
3. Valves: Electric Solenoid type and size of control valves as noted on the Drawings, including required fittings and accessories.
4. Wire: Color coded, copper conductor direct burial, UF-UL listed. All control or hot wires shall be red or black. All common or ground shall be white.
5. Central control system: As noted on the drawings.

2.7 AUTOMATIC CONTROL SYSTEM

A. Description: Low-voltage controller system, made for control of irrigation system automatic control valves. Controller operates on 120 volts a.c. building power system, provides 24 volts a.c. power to control valves, and includes stations for at least the number of control valves

indicated. Size and type as shown on Drawing. Control system will work in conjunction with a central control system. Control systems 120 volt power cord shall be plugged into a surge protection outlet and shall be ground to buildings grounding system.

B. Transformer: Internal-type, and suitable for converting 120 volts a.c. building power to 24 volts a.c. power.

C. Controller Stations for Automatic Control Valves: Each station is variable from approximately 1 to 60 minutes. Include switch for manual or automatic operation of each station.

D. Timing Device: Adjustable, 24-hour, 14-day clock to operate any time of day. Include provision for the following settings:

1. Setting to skip operation any day in timer period.
2. Setting for operation every other day.
3. Settings for operation 2 or more times daily.
4. Include manual or semi-automatic operation without disturbing preset automatic operation.
5. Provide NI-CAD battery and trickle charger to automatically power the timing device during power outages.

E. Wiring: UL 493, solid copper conductor, insulated cable, suitable for direct burial.

1. Feeder Circuit Cables: Type UF, No. 10 AWG minimum, between building and controllers.
2. Low-Voltage, Branch Circuit Cables: Type UF, No. 14 AWG minimum, between controllers and automatic control valves. Jacket color is other than feeder-circuit-cable jacket color. Furnish cables with jackets of different colors for multiple cable installation in same trench. Install control wire to side of main line. Where control wire leaves main or lateral line.
3. Splicing Materials: Pressure-sensitive, waterproof, thermoplastic wire connectors and other materials required to make specified connections. Locate all splice within valve boxes.
4. Two Wire Path: Shall be 12 AWG minimum solid copper double stranded otherwised called “Maxi Cable” or approved equal.

2.8 VALVE BOXES

A. NDS or approved equal green body with locking purple lid. Pro Series Jumbo rectangular box with T-cover, for all control valve assemblies. 10” round box for all mainline ball valves, gate valves, and hose bibs. All boxes shall have purple lids labeled “Do not Drink” in English and Spanish.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Investigate and determine available water supply water pressure and flow characteristics.

B. Insure that new pup station is providing necessary performance. Notify Engineer of any

deviations from design performance.

3.2 PREPARATION

A. Set stakes to identify proposed sprinkler locations. Obtain Irrigation Designer's approval before excavation.

3.3 PAVING WORK

A. Install piping in sleeves where crossing sidewalks, roadways, parking lots, playgrounds and railroads.
1. Install piping sleeves by boring or jacking under existing paving, where possible.
2. If it is necessary to cut pavement sections, pavement shall be replaced in cut areas.

3.4 PIPING APPLICATIONS

A. Refer to Part 2 of this Section for detailed specifications for pipe and fittings products listed below. Use pipe, tube, fittings, and joining methods according to the following applications. Piping in pits and aboveground may be joined with flanges instead of joints indicated.

B. Use pipe, tube, fittings, and joining methods according to the following applications.

C. Pressure Piping Underground: Use the following:
1. 2 ½- Inches (DN 80) and Smaller: ASTM D 2241, SDR 21, Schedule 40, polyvinyl chloride (PVC) plastic pipe; ASTM D 2467, Schedule 40, PVC plastic, socket-type pipe fittings; and solvent-cemented joints.
2. 3 -Inches (DN 100) and Larger: ASTM D 2241, SDR 26 rubber gasketed Class 200, polyvinyl chloride (PVC) plastic pipe; ASTM A 536 push on ductile iron fittings.

D. Circuit Piping: Use the following:
1. All Sizes: ASTM D 2241, SDR 21 Schedule 40, polyvinyl chloride (PVC) plastic pipe; ASTM D 2466, Schedule 40, PVC plastic, socket-type fittings; and solvent-cemented joints.

E. Sleeves: ASTM D 1785, Schedule 40, polyvinyl chloride (PVC) plastic pipe; ASTM D 2466, Schedule 40, PVC plastic, socket-type fittings; and solvent-cemented joints. Sleeve diameter shall be two sizes larger than pipe installed in sleeve with minimum sleeve size being 4". Extend sleeves 12" beyond walk or pavement edge.

3.5 JOINT CONSTRUCTION

A. Threaded Joints: Thread pipes with tapered pipe threads according to ASME B1.20.1, apply tape or joint compound, and apply wrench to valve ends into which pipes are being threaded.

B. Polyvinyl Chloride (PVC) Piping Solvent-Cemented Joints: Construct joints according to ASTM D 2672 and ASTM D 2855.
1. Handling of Solvent Cements, Primers, and Cleaners: Comply with procedures in ASTM F 402 for safe handling when joining plastic pipe and fittings with solvent

cements.

C. Dissimilar Materials Piping Joints: Construct joints using adapters that are compatible with both piping materials, outside diameters, and system working pressure. Refer to "Piping Systems - Common Requirements" Article for joining dissimilar metal piping.

D. Provide “Leemco” joint restraints at all gasket fittings where a change of direction occurs. Install all joint restraints per manufacturer’s recommendations. Contact Nunzio Dichristopher @ (916) 202-1333 to provide an installation clinic for all Leemco fittings and joints restraints. Coordinate with Engineer.

3.6 PIPING SYSTEMS - COMMON REQUIREMENTS

A. General Locations and Arrangements: Drawings indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, and in other design considerations. Install piping as indicated, except where deviations to layout are approved on coordination drawings.

B. Install components having pressure rating equal to or greater than system operating pressure.

C. Install piping free of sags and bends. Deflections angles shall not exceed manufacturer’s recommendations.

D. Locate groups of pipes parallel to each other, spaced to permit valve servicing.

E. Install fittings for changes in direction and branch connections.

F. Piping Connections: Except as otherwise indicated make piping connections as specified below.

1. Install unions, in piping 2 inches (DN 50) and smaller, adjacent to each valve and at final connection to each piece of equipment having 2-inch (DN 50) or smaller threaded pipe connection.
2. Install dielectric fittings to connect piping of dissimilar metals.

3.7 PIPING INSTALLATION

A. Install underground polyvinyl chloride (PVC) plastic pipe according to ASTM D 2774.

B. Lay piping on solid subbase, uniformly sloped without humps or depressions.

1. Install polyvinyl chloride (PVC) plastic pipe in dry weather when temperature is above 40 deg F (4 deg C). Allow joints to cure at least 24 hours at temperature above 40 deg F (4 deg C) before testing, unless otherwise recommended by manufacturer.

C. Minimum Cover: Provide following minimum cover over top of buried piping:

1. Pressure Piping: 18 inches.
2. Circuit Piping: 12 inches.
3. Sleeves: 24 inches.

D. Boring

1. Locations: Boring shall be used to route pipe, wiring or both under concrete structures

such as walks or curbs where trenching is impractical. Sleeves shall be installed in all bored holes.

2. Method: Boring shall be accomplished with a drill, auger, water jet, or any other instrument approved by the Owner's Representative capable of producing a precise hole. Boring shall not disturb overlaying structures or cause settlement and damage to those structures.

E. Install piping under sidewalks and paving in sleeves.

F. Back-filling

1. Inspection: The trenching shall not be backfilled until inspection and pressure testing has been completed and the pipe installation, including the grade, alignment and jointing has been found to be in compliance with the requirements of the plans and specifications.
2. Around and Over Pipe:
   a. Select backfill material consisting of sand, fine gravel or select earth, free of large lumps or rocks larger than 1/2 inch shall be used in backfilling around and over the installed pipe.
   b. The select material shall be obtained from the excavation material removed from the trench and shall be processed by screening, sifting, or selective sorting, so as to produce the type of backfill herein specified. The Contractor may at his option and own expense provide an acceptable imported material.
   c. Backfill material shall be carefully depostied around and over the pipe in layers not more than 6 inches thick, loose measurement, wetted to optimum moisture content and uniformly compacted to at least 95 percent of the maximum density obtainable at optimum moisture content as determined by AASHTO T99 Method A or D (latest revision), until the pipe has a cover depth of at least 12 inches.
3. Remainder of Trench Backfill:
   a. The remaining depth of the trench shall be backfilled to existing finish grade, with excavation material removed from the trench, which shall be wetted or dried to near optimum moisture content.
   b. Contractor shall be required to repair any settling problems which occur in the trench locations for the duration of the warranty period.
4. All trenches shall be sodded after backfilling.

G. Pipe fittings

1. All piping 3" diameter or greater shall use "Leemco" ductile iron push on type fittings. Provide "Leemco" joint restraints at all gasket fittings where change of direction occurs. See drawings for details.
2. All piping less than 3" diameter shall use Schedule 40 socket type fittings.

3.8 VALVE APPLICATIONS

A. Drawings indicate valve types to be used.

3.9 VALVE INSTALLATION

A. Valves: Install underground valves in valve boxes as shown on Drawings.

B. Control Valves: Install in valve control valve boxes, arranged for easy adjustment and removal.

Install union on downstream side. Maximum (1) valve per valve box.

C. Place 6 inches minimum of gravel below control valves for drainage. Maintain 4 inches minimum between bottom of valves and top of gravel. Place filter fabric barrier between gravel and valves. Valve box shall be free of dirt and debris.

3.10 AUTOMATIC CONTROL SYSTEM INSTALLATION

A. Install controllers according to manufacturer's written instructions and as indicated.

B. All control wiring shall be installed by an installer who has successfully completed the following Paige Electric Seminars; “Irrigation Wires and Cables and Proper Splicing Methods” and “Grounding, Bonding, and Shielding Electrical and Electroninc Irrigation Equipment”. Install control wiring in accordance with Specifications. Provide 12 inch expansion coil at each valve, decoder, and moisture sensor to which controls are connected, and at 100 ft intervals. Bury wire beside mainline pipe. Where wire leaves pipe, enclose in conduit. Use waterproof wire connectors as specified. Use white for common wires and black or red colors for all other wires (2 wire twisted excluded). No control wires shall be placed in thrust blocks. Locate wires on opposite side of thrust blocks.

3.11 TRENCHING

A. Trench Size:
1. Minimum Depth: as necessary to provide 24” min. and 30” max of cover for mainline, sleeves, and wires.
2. Minimum Depth: as necessary to provide 12” min. and 18” max of cover for all lateral lines..
3. Minimum Width: 4 inch pipe and larger – 12 inches.
4. Minimum Width: 3 inch pipe and smaller – 9 inches.

B. Trench to accommodate grade changes and slope to drains.

C. Maintain trenches free of debris, material, or obstructions that may damage pipe.

3.12 CONNECTIONS

A. Connect piping to sprinklers, devices, valves, control valves, specialties, and accessories.

B. Connect water supplies to irrigation systems. Include back-flow preventers on potable water supplies.

C. Electrical Connections: Connect to power source, controllers, and automatic control valves.

3.13 FIELD QUALITY CONTROL

A. Testing: Perform test of piping and valves before back-filling trenches. Piping may be tested in sections to expedite work. Owners representative must be present for testing.
1. Make all necessary provisions for thoroughly bleeding the line of air and debris.

2. Before testing, fill the line with water for a period of at least 24 hours.
3. After valves have been installed, test all live water lines for leaks at a pressure of 100 psi for a period of two hours, with all couplings exposed and with all pipe sections center-loaded.
4. Furnish all necessary testing equipment and personnel.
5. Correct all leaks and retest until acceptance by the Project Engineer.

B. Field inspection and testing will be performed under provisions of Section 01400.

C. Installer's Field Service
1. Prepare and start systems under provisions of Section 01650.
2. Provide one complete spring start-up and a fall shutdown, including winterization to blow out entire system with compressed air.

D. Adjust work under provisions of section 01650.

E. Change and/or adjust head types for full water coverage as directed.

F. Adjust nozzle spray pattern as required to avoid water spray on building walls, roads or sidewalks.

G. Have all backflow preventers tested by appropriate agency.

3.14 CLEANING AND ADJUSTING

A. Flush dirt and debris from piping before installing sprinklers and other devices.

B. Adjust automatic control valves to provide flow rate of rated operating pressure required for each sprinkler circuit.

C. Carefully adjust lawn sprinklers so they will be flush with, or not more than 2 inch (13 mm) above, finish grade after completion of landscape work. Adjust so that sprinklers do not spray on buildings or walls.

D. Adjust settings of controllers and automatic control valves to insure proper watering of all landscaping.

3.15 COMMISSIONING

A. Starting Procedures: Follow manufacturer's written procedures. If no procedures are prescribed by manufacturers, proceed as follows:
1. Verify that specialty valves and their accessories have been installed correctly and operate correctly.
2. Verify that specified tests of piping are complete.
3. Check that sprinklers and devices are correct type.
4. Check that damaged sprinklers and devices have been replaced with new materials.
5. Check that potable water supplies have correct type back-flow preventers.
6. Energize circuits to electrical equipment and devices.
7. Adjust operating controls.

B. Operational Testing: Perform operational testing after hydrostatic testing is completed, backfill is in place, and sprinklers are adjusted to final position.

3.16 DEMONSTRATION

A. Provide irrigation system demonstration under provisions of Section 01650. Record on VHS video format.

B. Demonstrate to Owner: that system meets coverage requirements and that automatic control functions properly.

C. Demonstrate to Owner's maintenance personnel operation of equipment, sprinklers, specialties, and accessories. Review operating and maintenance information including start up and winterization procedures.

D. Provide 7 days written notice in advance of demonstration.

END OF SECTION 328400

SECTION 329200

TURF AND GRASSES

PART 1 - GENERAL

0.1 SUMMARY

A. Section Includes
1. Soil Preparation and amendment.
2. Turf Seeding
3. Turf Sodding
4. Maintenance
5. Clean-up

B. Definitions
1. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, Brome Grass, Black Henbane, Buffalobur, Common Crupina, Dalmatian Toadflax, Diffuse Knapweed, Dyer's Woad, Eurasian Watermilfoil, Field Bindweed, Hoary Cress, joined Goatgrass, Leafy Spurge, Matgrass, Meadow Hawkweed, Meadow Knapweed, Milium, Musk Thistle, Orange Hawkweed, Perennial Pepperweed, Perennial Sowthistle, Poison Hemlock, Puncturevine, Purple Loosestrife, Russian Knapweed, Scotch Broom, Scotch Thistle, Silverleaf Nightshade, Skeletonleaf Bursage, Spotted Knapweed, Syrian Beancaper, Toothed Spurge, Yellow Starthistle, Yellow Toadflax.
2. Finish Grade: Elevation of finished surface of planting soil.
3. Planting Soil: Imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.
4. Topsoil: Type E material per specifications section 312300.
5. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

0.2 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostrand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

C. Submit sod certification for grass species and location of sod source.

D. Qualification Data: For landscape Installer.

E. Maintenance Data
1. Submit under provisions of Division 1.
2. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer; and herbicide.

1.4 QUALITY ASSURANCE

A. Seed: Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

B. Sod:
1. Minimum age of 12 months, with root development that will support its own weight without tearing, when suspended vertically by holding the upper two corners.
2. Qualifications: Sod Producer shall be company specializing in sod production and harvesting with minimum five years experience, and certified by the State of Idaho.

C. Regulatory Requirements
1. Comply with regulatory agencies for fertilizer and herbicide composition.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Division 1.

B. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Each variety of grass seed shall be tested seed from the latest crop available, and shall be delivered in standard sealed containers labeled in accordance with State and Federal laws. The label shall show the variety of seed, the percentage of germination, purity and weed content. All varieties of grass seed shall have a minimum tested germination of 95% and contain a minimum of 95% pure seed by weight.

C. Sod
1. Deliver sod on pallets, in rolls. Protect exposed roots from dehydration.
2. Do not deliver more sod than can be laid within 24 hours.

D. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.6 PROJECT/SITE CONDITIONS

A. Planting Season: Seeding shall be accomplished in the fall prior to September 15th. If this is not accomplished, seeding shall be in the following spring after April 15.

1.7 SEQUENCING AND SCHEDULING

A. Coordinate work under provisions of Division 1.

B. Coordinate with installation of underground sprinkler system piping and watering heads.

1.8 EXTENDED WARRANTY

A. Provide one year warranty under provisions of Division 1. Warranty includes coverage for one continuous growing season; replace lawn (seed or sod) that is dead, unhealthy or in an unsightly condition.

1.9 MAINTENANCE

A. Seeded Lawn:
1. Maintain seeded areas immediately after placement until grass is uniform and well established, full with no bare spots and exhibits a vigorous growing condition.
2. Seeded lawn areas will not be accepted as substantial completion until a healthy, full, uniform stand of grass with no bare spots has been obtained.

B. Sodded Lawn:
1. Maintain sodded areas immediately after placement until Final Acceptance.

1.10 GUARANTEE AND REPLACEMENT

A. All plant material and other materials installed under the Contract shall be guaranteed until Final Acceptance against any and all poor, inadequate or inferior materials and/or workmanship or improper maintenance, as determined by the Owner's Representative, shall be replaced by the Contractor at his expense. Refer to Part 1.8 of this section for additional requirements.

B. Any materials found to be dead, missing, or not in a satisfactory or healthy condition during the maintenance period shall be replaced immediately. The Owner's Representative shall be the sole judge as to the condition of material. Material to be replaced within the guarantee period shall be replaced by the Contractor within five (5) days of written notification by the Owner. All replacement materials and installations shall comply with the Plans and Specifications. Refer to Part 1.8 of this section for additional requirements.

PART 2 PRODUCTS

2.1 MATERIALS

A. Turf Sod: ASPA Certified Field grown grade; cultivated grass sod; type indicated below; with strong fibrous root system, free of stones, burned or bare spots; containing no more than 5 weeds per 1000 sf. Sod shall be from one of the following approved sources;
1. 70% certified Kentucky Bluegrass / 30% certified Perennial Ryegrass.

B. Seed Mixtures: Seed shall be weed free, fresh, re-cleaned, Grade A, new crop consisting of the percentages of mix as specified. Seed shall be labeled in accordance with the U.S. Department of Agriculture Rules and Regulations under the Federal Seed Act presently in effect. Seed shall be from one of the following approved sources.
1. 70% certified Kentucky Bluegrass / 30% certified Perennial Ryegrass.

C. Seed shall be provided from and mixed by a certified dealer. Seed mixture shall be labeled with manufacturer's guaranteed analysis, germination rate and purity rate.

D. Soil Conditioner
Simplot BA-Humus

E. Soil Amendment: Compost

1. Compost shall be a well decomposed, stable, weedfree organic matter source. It shall be derived from agricultural, food, or industrial residuals; biosolids (treated sewage sludge); yard trimmings or source-separated or mixed solid waste. The product shall contain no substances toxic to plants, will possess no objectionable odors and shall not resemble the raw material from which it was derived.
2. Compost shall meet the following parameters:
    a. pH: 5.0 – 8.5
    b. Soluble salt concentration: max. 10
    c. Moisture content: 30-60% (wet weight basis)
    d. Organic matter content: 30-65% (dry weight basis)
    e. Particle size: 98% pass through ¾" screen or smaller
    f. Physical contaminants (inerts): less than 1%
3. Compost shall be measured by the cubic yard at the point of loading.
4. Compost shall be Cascade Compost available through Cloverdale Nursery or approved equal.

F. Fertilizer

1. Planting Pit Fertilizer: Shall be Gro-Power Plus (bacteria included) with soil penetrant and shall consist of the following percents by weight:
    5% nitrogen
    3% phosphoric acid
    1% potash
    50% humus
    15% humic acid
2. Turf Starter Fertilizer: Shall consist of the following percents by weight:
    12% nitrogen
    20% phosphoric acid
    0% potash
3. Planting Tablets: Slow-release 21 gram tablets as manufactured by Agriform, containing the following percentages of nutrients by weight:
    20% nitrogen
    10% phosphoric acid
    5% potash
4. Soil Sulfur: Agricultural grade sulfur containing minimum of 99% sulfur (expressed as elemental).
5. Soil Amendment NPK Fertilizer: Shall consist of the following percents by weight:
    6% nitrogen
    20% phosphoric acid
    20% potash

G. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

H. Weed Control: Use Enide (Upjohn), Dymid (Elanco Products Co.), Treflan, Eptan, Surflan, Clarity (2^{nd}) or approved equal.

I. Weed Abatement: "Round-up" (contact herbicide) by Monsanto, or approved equal.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that prepared topsoil is ready to receive the work of this Section.

B. Beginning of installation means acceptance of existing site conditions.

C. All planting areas shall be weed free at the time of seed or sod installation.

D. Soil Tests: Per Earthmoving specification section 312000.

Prior to planting, amendments shall be added to correct for problems as noted by the soils report. A copy of the soils report shall be attached to the irrigation schedule and provided to the owner/controller operator. Soil amendments shall be called out on initial plans submitted but are considered for bid only. Results of the soils tests determine the proper amendments.

3.2 WEED ABATEMENT (only required for Seeded Turf areas)

A. All areas to be seeded shall have weed abatement operations performed on them prior to seeding and after placement of soil amendments.

B. Contractor shall spray all exposed weeds with "Round-up" (contact herbicide) or approved equal.

C. Do not water for at least three (3) days. Remove exposed weeds from the site.

D. Contractor shall operate the automatic irrigation system for a period of five (5) days at peak watering schedule valve times. At conclusion of this watering period, discontinue watering for five (10) days.

E. Apply second application of "Round-up" to all exposed weeds. Apply in strict conformance with manufacturer's specifications and instructions. Do not water for at least three (3) days. Remove weeds from the site. If no exposed, germinated weeds are present contact landscape architect to review the site for approval to begin seeding operations.

F. If any evidence of weed germination exists after two (2) applications, Contractor shall be directed to perform a third application.

G. At the time of seeding, all planting areas shall be weed free.

3.3 EXECUTION

A. Soil Amendments: After approximate finished grades have been established soil shall be conditioned and fertilized in the following manner. Soil amendments shall, at the following rate, be uniformly spread and cultivated thoroughly by means of mechanical tiller into the top six (6) inches of soil.

B. Application Rates
1. 30 lbs BA-Humus per acre
2. 2 cubic yards commercial grade compost per 1000 SF

C. Turf Seeding:
1. Top elevation of seed 1/2 inch below adjoining edging, paving, curbs and sidewalks.

2. Do not sow immediately following rain, or when ground is too dry. Temperature shall be between 55 F and 95 F for a 24 hour period. Wind shall be less than 20 mph.
3. Turf Seed shall be sown at the following rates;
   a. Turf Seed: 8.5 lbs. per 1000 Square Feet

4. Seed shall be hydroseeded or drill seeded at the contractors option. Areas with a 4:1 or greater slope shall be hydroseeded.
   a. Hydroseed: Mix specified seed, mulch and water, using equipment specified designed for hydroseed application. Apply slurry uniformly to all areas to be seeded. Apply water with a fine spray immediately after each area has been mulched. Saturate the top 4 inches of soil.
   b. Drill Seed: Seed shall be spread by a mechanical cultipacker ("Brillon" equipment or equal) or approved similar equipment to drill, cover and firm the seed bed in one operation. Install with one-half (1/2) of the seed for each area being sown in a direction at right angles to the other half. Apply water with a fine spray immediately after each area has been seeded. Saturate the top 4 inches of soil.

D. Turf Sod:
1. Moisten prepared surface immediately prior to laying sod.
2. Lay sod immediately after delivery to site to prevent deterioration.
3. Lay sod tight with no open joints visible, and no overlapping; stagger end joints 12 inches minimum. Do not stretch or overlap sod pieces.
4. Lay smooth. Align with adjoining grass areas.
5. Place top elevation of sod ½ inch below adjoining edging paving, curbs and sidewalks.
6. On 3:1 or greater slopes, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet on center. Drive pegs flush with soil portion of sod.
7. Water sodded areas immediately after installation. Saturate sod to 4 inch depth.
8. After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove minor depressions and irregularities.

E. Fertilizing

1. Apply fertilizer in accordance with manufacturer's instructions. Apply on day 45 and day 85 and every 8 to 12 weeks thereafter.

3.4 MAINTENANCE

A. Maintenance shall be according to the following standards. All areas shall be weeded and cultivated at intervals of not more than ten (10) days. Watering, trash and debris removal, mowing, rolling, edging, trimming, fertilization, spraying and pest control, as required, shall be included in the maintenance period. Cleaning of street gutters and sidewalks shall be included. The Contractor shall be responsible for maintaining adequate protection of the area. Damaged areas shall be repaired at the Contractor's expense. The Contractor shall reseed all spots or areas within the lawn where normal turf growth is not evident.

B. Turf Care

1. Mowing will be contractor's responsibility until date of Final Acceptance.
2. Grass clippings shall be picked up and removed from the site.
3. Edges shall be trimmed at least twice monthly or as needed for neat appearance. Clippings shall be removed from paved areas and planting areas and removed from the site.

4. Lawn areas shall be watered at such frequency as weather conditions require to replenish soil moisture below root zone and to establish healthy stands of turf.
5. Roll surface to remove minor depressions or irregularities.
6. Control growth of weeds. After lawn has been mowed at least three times, install a broad-leaf weed killer. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
7. Immediately reseed areas which show bare spots. Provide a uniform 100% coverage of thick, healthy strand of grass, full with no bare spots and exhibits a vigorous growing condition.
8. Maintenance period to be a minimum of sixty (60) days after date of substantial completion. If seeded after September 15, continue maintenance to the following spring until acceptable lawn is established.

C. Continuously maintain the entire project area during the progress of work until final acceptance of the project by the Owner.

3.5 CLEANING

A. After all seeding and Sodding operations have been completed; remove all trash, excess soil or rubbish from the property. All scars, ruts or other marks in the ground caused by this work shall be repaired and the ground left in a neat and orderly condition throughout the site. Contractor shall pick up all trash resulting from this work no less frequently than each Friday before leaving the site, once a week, and/or the last working day of each week. All trash shall be removed completely from the site. The Contractor shall leave the site area broom-clean and shall wash down all paved areas within the Contract area, leaving the premises in a clean condition acceptable to the Owner and Construction Manager.

3.6 PROTECTION

A. Identify seeded areas with stakes and string around area periphery.

B. Protect seeded and sodded areas with warning signs during maintenance period.

END OF SECTION 329200

REQUIREMENTS	YES/NO
Three (3) copies of the Bid	
Attachment 1 Bid Schedule (attach)	
Contractor can meet Specifications (must be addressed in bid)	
Public Works Contractor License (attach)	
Warranty for Workmanship	
Bond Documentation	
Proof of Insurance (attach)	

ATTACHMENT 3 CHECKLIST OF REQUIREMENTS

GENERAL:

Please use this checklist to determine if all requirements are met and included with your bid.

CONSTRUCTION CONTRACT

BETWEEN OWNER AND CONTRACTOR

UTILITY & INFRASTRUCTURE IN SUPPORT OF MODULAR BUILDINGS

FOR THE

COLLEGE OF WESTERN IDAHO

NAMPA CAMPUS

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CONSTRUCTION CONTRACT BETWEEN OWNER AND CONTRACTOR

THIS CONSTRUCTION CONTRACT BETWEEN OWNER AND CONTRACTOR (the "Contract") is by and between the **COLLEGE OF WESTERN IDAHO** ("CWI" or "Owner") and **_____CONSTRUCTION** ("Contractor'') and is for the Project (the "Project") identified as **Project No. CNCAB19MODBLDGS** as further described in **Summary of Work** (attached) and incorporated herein by reference. This Contract shall be effective on _____ when executed by both parties.

In consideration of the mutual promises, covenants, and agreements stated herein, and for other good and valuable consideration, the sufficiency of which is hereby acknowledged, the Owner and the Contractor agree as set forth below:

ARTICLE 1 CONTRACT DOCUMENTS

1.1 The Contract Documents consist of this Contract, the Contractor's Bid, the Conditions of the Contract (General, Supplementary and other conditions) and any Addenda thereto issued prior to and all modifications issued after execution of this Contract, written amendments signed by both the Owner and the Contractor, Change Directives, Modifications, and any written orders by the Owner (the "Contract Documents"). Documents not included or expressly contemplated in this Article 1 do not, and shall not, form any part of the Contract Documents.

1.2 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.

ARTICLE 2 REPRESENTATIONS AND WARRANTIES OF THE CONTRACTOR

In order to induce the Owner to execute this Contract and recognizing that the Owner is relying thereon, the Contractor, by executing this Contract, makes the following express representations to the Owner:

2.1 The Contractor is fully qualified to act as the Contractor for the Project and has, and shall maintain, any and all licenses, permits or other authorizations necessary to act as the Contractor for, and the Contractor shall perform the work required by the Contract Documents for **Project No. CNCAB19MODBLDGS**.

2.2 The Contractor has become familiar with the Project site and the local conditions under which the Project is to be constructed and operated particularly in correlation to the requirements of the Contract.

2.3 The Contractor has received, reviewed, compared, studied and carefully examined all of the documents which make up the Contract Documents, including the Specifications, Scope Description of Work, and any Addenda, and has found them in all respects to be complete, accurate, adequate, consistent, coordinated and sufficient for construction. Such review, comparison, study and examination shall be a warranty that the contractor believes that the documents are complete and the Project is buildable as described except as reported.

2.4 The Contractor warrants to the Owner that all labor furnished on this Project shall be competent to perform the tasks undertaken; materials and equipment furnished under the Contract will be new and of high quality unless otherwise required or permitted by the Contract Documents; that the Work will be complete, of high quality and free from defects not inherent in the quality required or permitted; and that the Work will strictly conform to the requirements of the Contract Documents. Any Work not strictly conforming to these

requirements, including substitutions not properly approved and authorized, shall be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse by Owner or its representatives, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear.

ARTICLE 3 INTENT AND INTERPRETATION

With respect to the intent and interpretation of this Contract, the Owner and the Contractor agree as follows:

3.1 This Contract constitutes the entire and exclusive agreement between the parties with reference to the Project, and supersedes any and all prior discussions, communications, representations, understandings, negotiations or agreements. This Contract also supersedes any bid documents.

3.2 The intent of the Contract is to include all items necessary for the proper execution and completion of the Project and anything that may be required, implied or inferred by the documents which make up this Contract, or any one or more of them, shall be provided by the Contractor for the Contract Amount(s). The Contract Documents are complementary, and what is required by one shall be as binding as if required by all.

3.3 Nothing contained in this Contract shall create, nor be interpreted to create, privity or any other relationship whatsoever between the Owner and any person or entity except the Contractor; provided, however, that the Owner is entitled to performance and enforcement of obligations under the Contract intended or necessary to facilitate its duties. Any reference to the Owner or the Contractor shall be deemed to include authorized representatives.

3.4 When a word, term or phrase is used in this Contract, it shall be interpreted or construed first as defined herein; second, if not defined, according to its generally accepted meaning in the construction industry; and third, if there is no generally accepted meaning in the construction industry, according to its common and customary usage.

3.5 The words "include," "includes," or "including," as used in this Contract, shall be deemed to be followed by the phrase "without limitation."

3.6 The specification herein of any act, failure, refusal, omission, event, occurrence or condition as constituting a material breach of this Contract shall not imply that any other, non-specified act, failure, refusal, omission, event, occurrence or condition shall be deemed not to constitute a material breach of this Contract.

3.7 The Contractor shall have a continuing duty to read, examine, review, compare and contrast each of the documents which make up this Contract, shop drawings and other submittals, and shall give timely written notice to the Owner of any conflict, ambiguity, error or omission which the Contractor may find with respect to these documents before proceeding with the affected Work.

3.8 The express or implied approval by the Owner of any shop drawings or other submittals shall not relieve the Contractor of the continuing duties imposed hereby, nor shall any such approval be evidence of the Contractor's compliance with this Contract. The Owner will prepare documents for the Project, including but not limited to Drawings and Specifications for the Project, which are accurate, adequate, consistent, coordinated and sufficient for construction. HOWEVER, THE OWNER MAKES NO REPRESENTATION OR WARRANTY OF ANY NATURE WHATSOEVER TO THE CONTRACTOR CONCERNING SUCH DOCUMENTS. The Contractor again hereby acknowledges and represents that it has received, reviewed and carefully examined such documents; has found them to be complete, accurate, adequate, consistent, coordinated and sufficient for construction; and that the Contractor has not, does not and will not rely upon any representations or warranties by the Owner concerning such documents, as no such representations or warranties have been or are hereby made.

3.9 In the event of any conflict among any of the documents which make up this Contract, the Owner shall interpret the documents, and the interpretation shall be binding on both the Owner and Contractor; provided, however, that this does not change the Owner's right to make decisions regarding Claims in accordance with Article 13 and Article 14. If no interpretation is provided by the Owner, the most stringent requirement in the Contract Documents will apply.

ARTICLE 4 OWNERSHIP OF DOCUMENTS

4.1 Unless otherwise agreed by the Owner and its consultants, the party that prepared the drawings, specifications and other documents is the author of such with all copyright, common law, statutory and other reserved rights. The Owner may retain one (1) record set of the Drawings and Specifications and other documents but shall not own or claim any copyright in them.

The Drawings and Specifications and other documents, and any copies, are to be used solely for this Project, and not on any other project or additions to this Project outside this Contract, without written consent of the Contractor provided, however, that copies may be made of applicable portions as necessary for completion of the Work. Such copies shall include any copyright notice on the Drawings and Specifications and other documents.

Submission to or use by a regulatory body related to this Project is an acceptable use.

ARTICLE 5 CONTRACTOR'S PERFORMANCE

The Contractor shall perform all of the Work required, implied or reasonably inferred from this Contract, including the following:

5.1 Construction of the Project.

5.2 The furnishing of any required surety bonds and insurance.

5.3 The provision or furnishing, and prompt payment therefore, of labor, supervision, services, materials, supplies, equipment, fixtures, appliances, facilities, tools, transportation, storage, power, fuel, heat, light, cooling or other utilities required for construction and all necessary permits, required for the construction of the Project.

5.4 The creation and submission of a detailed and comprehensive set of marked up blue or black-lined record drawings. Said record drawings shall be submitted to and approved by the Owner as a condition precedent to payment to the Contractor.

ARTICLE 6 TIME FOR CONTRACTOR'S PERFORMANCE

6.1 The Contractor shall commence the performance of this Contract in accordance with the "Notice to Proceed" (Exhibit F) issued by the Owner and shall diligently continue its performance to and until final completion of the Project. The Contractor shall accomplish Substantial Completion of the Project on or before the time indicated in Exhibit F. The period of time, including any adjustments made under this Contract, for the Contractor to reach Substantial Completion is the "Contract Time."

6.2 The Contractor may be assessed by and be responsible to the Owner for the amount indicated in Exhibit A per day for each and every calendar day of unexcused delay in achieving Substantial Completion beyond the date set forth for Substantial Completion. Any sums owed hereunder by the Contractor shall be payable not as a penalty but as liquidated damages, representing an estimate of delay damages likely to be sustained by the Owner estimated at the time of this Contract. When the Owner reasonably believes that Substantial Completion will be inexcusably delayed, the Owner shall be entitled, but not required, to withhold from any amounts

otherwise due the Contractor an amount then believed by the Owner to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving Substantial Completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages. The Owner's right to liquidated damages is not, and shall not be deemed to be, an exclusive remedy for delay and the Owner shall retain all remedies at law or in equity for delay or other breach.

6.3 The term "Substantial Completion," as used herein, shall mean that point at which, as certified in writing by the Design Professional, or if there is no Design Professional, as certified by the Owner or the Owner's representative as identified in Exhibit B, the entire Project is at a level of completion in strict compliance with the Contract Documents, such that the Owner or its designee can enjoy beneficial use or occupancy and can use or operate it in all respects for its intended purpose. If, in the reasonable determination of the Owner, receipt of operation and maintenance manuals or completion of training is necessary for such beneficial use or occupancy, then there shall be no Substantial Completion until such manuals are provided or such training is completed. Partial use or occupancy of the Project shall not result in the Project being deemed substantially complete, or accepted as substantially complete, and such partial use or occupancy shall not be evidence of Substantial Completion. The Project shall not be deemed accepted until it is finally complete.

6.4 Any request by the Contractor for an extension of the Contract Time must be made in accordance with, and is subject to, Article 13 and Article 14 related to Claims.

6.5 The Owner shall have no liability of any kind to the Contractor if a schedule or other document submitted by the Contractor shows an intention to complete the Work prior to the scheduled completion date and for any reason other than Owner caused delay, the Contractor is not able to achieve such early completion.

ARTICLE 7 CONTRACT PAYMENTS

7.1 The Owner shall pay, and the Contractor shall accept, as full and complete payment for the Contractor's timely performance of its obligations hereunder, the Contract Amount as provided in the Contract documents as indicated under Exhibit A.

7.2 Prior to submitting its first pay application, the Contractor shall prepare and present to the Owner the Contractor's Schedule of Values apportioning the Contract Amount among the different elements of the Project for purposes of periodic and final payment. The Contractor's Schedule of Values shall be presented in whatever format, with such detail, and backed up with whatever supporting information the Owner reasonably requests. The Contractor shall not imbalance it's Schedule of Values nor artificially inflate any element thereof. The violation of this provision by the Contractor shall constitute a material breach of this Contract. The Contractor's Schedule of Values will be utilized for the Contractor's requests for payment but shall only be so utilized after it has been approved in writing by the Owner.

7.3 The Owner shall pay the Contract Amount(s) to the Contractor in accordance with the procedures set forth in this Article. The Contractor shall submit a Contractor's Request for Payment, on or before the day of each month indicated in Exhibit A or otherwise agreed to, after commencement of performance, but no more frequently than once monthly. Said payment request shall be on Owner's standard form, or an alternate form approved by the Owner, and shall include whatever supporting information as may be required by the Owner. Therein, the Contractor may request payment for one hundred percent (100%) of the Work satisfactorily completed to the date of the Contractor's Request for Payment, based on the Contract Amount allocated on the Schedule of Values. The Contractor's Request for Payment may include only: properly provided labor, materials or equipment properly incorporated into the Project, and time and materials or equipment necessary for the Project or that will be incorporated into the Project and are properly stored at the Project site (or elsewhere if off-site storage is approved in writing by the Owner). The Contractor's Request for Payment must exclude the

total amount of previous payments received from the Owner. Any payment on account of stored materials or equipment will be subject to the Contractor providing written proof that the Owner has title to such materials or equipment and that they are fully insured against loss or damage. Each such Contractor's Request for Payment shall be signed by the Contractor and its submission shall constitute the Contractor's affirmative representation that the quantity of Work has reached the level for which payment is requested; that the Work has been properly installed or performed in strict compliance with the Contract; that all Work for which the Owner has previously paid is free and clear of any lien, claim or other encumbrance of any person whatsoever; and that the Contractor knows of no reason why payment should not be made as requested. As a condition precedent to payment, the Contractor shall, if required by the Owner, furnish to the Owner properly executed waivers or releases, in a form acceptable to the Owner, from all subcontractors, materialmen, suppliers or others having any claims or alleged claims, wherein said subcontractors, materialmen, suppliers or others shall acknowledge receipt of all sums due pursuant to all prior Contractor's Requests for Payment, and waive and relinquish any rights or other claims relating to the Project or Project site. The submission by the Contractor of the Contractor's Request for Payment also constitutes the Contractor's affirmative representation that, upon payment of the Contractor's Request for Payment submitted, title to all Work included in such payment shall be vested in the Owner.

Thereafter, the Owner shall review the Contractor's Request for Payment and may also review the Work at the Project site or elsewhere to determine whether the quantity and quality of the Work are as represented in the Contractor's Request for Payment and as required by this Contract. The Owner shall approve in writing the amount which, in the opinion of the Owner, is properly owing to the Contractor and such approval is required before the Owner shall have any payment obligation. The Owner may withhold such approval, in whole or in part, as necessary to protect the Owner if it reasonably believes that the quantity or quality of the Work is not as represented in the Contractor's Request for Payment or is not in strict conformance to the Contract Documents.

7.4 The Owner shall make payment to the Contractor no more than thirty (30) days following receipt by the Owner of the written approval of each Contractor's Request for Payment. The amount of each such payment shall be the amount approved for payment by the Owner less such amounts, if any, otherwise owing by the Contractor to the Owner or which the Owner shall have the right to withhold as authorized by this Contract. The Owner's approval of the Contractor's Request for Payment shall not preclude the Owner from the exercise of any of its rights it may have in this Contract, at law or in equity, as set forth in Paragraph 7.8 hereinafter.

7.5 Off-site storage will not be approved at locations more than thirty (30) miles from the Project site or outside the State of Idaho and any payment for any off-site storage is subject to the following:

.1 The Contractor must provide at least thirty (30) days' advance written notice of its request to store off-site. Such notice must include a description of the type, quantities, locations and values of materials involved for the next billing cycle. All invoices must indicate the type, quantities and value of materials or equipment for which payment is requested;

.2 All materials stored off-site must be segregated and clearly marked with the CWI Project number and as being the "Property of CWI";

.3 The Owner and/or the Owner's Representative must have unrestricted access to the stored materials during all business hours and may physically inventory all invoiced materials and equipment and may physically inspect the storage conditions;

.4 The Contractor must provide written Consent of Surety to off-site storage of materials and equipment and to payment for such materials and equipment prior to incorporation in the Work. Consent must be from the Surety. Consent of local broker or agent is not acceptable; and

.5 The Contractor must maintain and must provide to the Owner, upon request, a current log of stored materials and equipment, which reflects when materials and equipment are used or added.

7.6 When payment is received from the Owner, the Contractor shall immediately pay all subcontractors, materialmen, laborer and suppliers the amounts they are due for the Work covered by such payment. The Contractor shall not withhold from a subcontractor or supplier more than the percentage withheld from a payment certificate for the subcontractor's or supplier's portion of the Work. In the event the Owner becomes informed that the Contractor has not paid a subcontractor, materialmen, laborer or supplier as provided herein, the Owner shall have the right, but not the duty, to issue future checks and payment to the Contractor of amounts otherwise due hereunder naming the Contractor and any such subcontractor, materialmen, laborer or supplier as joint payees. Such joint check procedure, if employed by the Owner, shall create no rights in favor of any person or entity beyond the right of the named payees to payment of the check and shall not be deemed to commit the Owner to repeat the procedure in the future.

7.7 Payment to the Contractor, utilization of the Project for any purpose by the Owner, or any other act or omission by the Owner shall not be interpreted or construed as an acceptance of any Work of the Contractor not strictly in compliance with this Contract.

7.8 The Owner shall have and be entitled to the right to refuse to make any payment, including by reducing payment under any Contractor’s Request for Payment, and, if necessary, may demand the return of a portion or all of an amount previously paid to the Contractor for reasons that include the following:

.1 The quality of the Contractor's work, in whole or part, is not in strict accordance with the requirements of this Contract or identified defective work, including punch list work, is not remedied as required by the Contract Documents;

.2 The quantity of the Contractor's work, in whole or in part, is not as represented in the Contractor's Request for Payment or otherwise;

.3 The Contractor's rate of progress is such that, in the Owner's opinion, Substantial Completion or final completion, or both, may be inexcusably delayed or that the Owner will incur additional costs or expense related to repeated Substantial Completion or final completion inspections through no fault of the Owner;

.4 The Owner reasonably believes that the Contractor has failed to use Contract funds, previously paid the Contractor by the Owner, to pay Contractor's project-related obligations, including subcontractors, laborers and material and equipment suppliers;

.5 There are Claims made or it seems reasonably likely that Claims will be made, against the Owner;

.6 The Contractor has caused a loss or damage to the Owner, or another contractor;

.7 The Owner reasonably believes that the Project cannot be completed for the unpaid balance of the Contract Amount or the Owner reasonably believes that the Project cannot be completed within the Contract Time and that the unpaid balance of the Contract Amount would be inadequate to cover the cost of actual or liquidated damages for the anticipated delay; and

.8 The Contractor fails or refuses to perform any of its obligations to the Owner; or In the event that the Owner makes written demand upon the Contractor for amounts previously paid by the Owner as contemplated in Paragraph 7.8, the Contractor shall promptly comply with such demand.

7.9 If the Owner, without cause, fails to pay the Contractor any amounts due and payable thirty (30) days after those amounts are due pursuant to Paragraph 7.4, the Contractor shall have the right to cease the Work until receipt of proper payment. Contractor must first provide written notice to the Owner of the Contractor's intent to cease the Work ten (10) days prior to stopping the Work under this Paragraph. If any amounts remain unpaid after fifty-one (51) days after the Owner approves the Contractor's Request for Payment under Paragraph 7.4, interest at the rate of four percent (4%) per annum shall accrue on those unpaid amounts.

7.10 When Contractor considers Substantial Completion has been achieved, the Contractor shall notify the Design Professional, or if there is no Design Professional, Owner or Owner's representative in writing and shall furnish to the Owner a listing of those matters yet to be finished. The Owner will thereupon conduct an inspection to confirm that the Work is, in fact, substantially complete. Upon its confirmation that the Contractor's work is substantially complete, the Owner will so notify the Contractor in writing and will therein set forth the date of Substantial Completion. The Owner and the Contractor must accept the date of Substantial Completion in writing. Guarantees and warranties required by this Contract shall commence on the date of Substantial Completion. At the Contractor's Request for Payment following Substantial Completion, the Owner shall pay the Contractor an amount sufficient to increase total payments to the Contractor to ninety-five percent (95%) of the Contract Amount, less any liquidated damages, less the reasonable costs as determined by the Owner for completing all incomplete work, correcting and bringing into conformance all defective and nonconforming work, and handling any outstanding or potential Claims. If the Owner determines that the Contractor has made or is making satisfactory progress on any uncompleted portions of the Work, the Owner may, at its discretion, release a portion of the retainage to the Contractor prior to the actual final completion of the conditions set forth in Paragraph 7.12. It is the intent of the parties that the Project will be accepted only in total (at Substantial Completion and Final Completion) and not in phases unless provided for. Any acceptance other than in total shall require written agreement by the Owner.

7.11 When Contractor considers the Project is at final completion, it shall notify the Owner or Owner's representative thereof in writing. Thereupon, the Owner will perform a final inspection of the Project. If the Owner confirms that the Project is complete in full accordance with the Contract Documents and that the Contractor has performed all of its obligations to the Owner, final approval for payment certifying to the Owner that the Project is complete and the Contractor is entitled to the remainder of the unpaid Contract Amount, less any amount withheld pursuant to this Contract.

7.12 Liquidated Damages Clause- If the Contractor fails to achieve final completion within a reasonable number of days as established by the Design Professional from the date of Substantial Completion, the Contractor may be assessed and be responsible to the Owner for fifty percent (50%) of the daily amount of liquidated damages as established pursuant to Paragraph 6.2 and, Exhibit F per day for each and every calendar day of unexcused delay in achieving final completion beyond the date established for final completion of the Work. Any sums due and payable hereunder by the Contractor shall be payable not as a penalty but as liquidated damages representing an estimate of delay damages likely to be sustained by the Owner, estimated at or before the time of executing this Contract. When the Owner reasonably believes that final completion will be inexcusably delayed, the Owner may withhold from any amounts otherwise due the Contractor an amount then believed by the Owner to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving final completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages. The Owner's right to liquidated damages is not, and shall not be deemed to be, an exclusive remedy for delay and the Owner shall retain all remedies at law or in equity for delay or other breach.

7.13 As a condition precedent to final payment, the Contractor must furnish the Owner, in the form and manner required by Owner the following:

.1 An affidavit that all of the Contractor's obligations to subcontractors, laborers, equipment or material suppliers or other third parties in connection with the Project have been paid or otherwise satisfied;

.2 A release by the Contractor of all Claims it has or might have against the Owner or the Owner's property (EXHIBIT H);

.3 Contractor's Affidavit of Debts and Claims (AIA Document G706);

.4 Consent of Surety to final payment (AIA Document G707);

.5 Tax Release from the Idaho State Tax Commission (EXHIBIT G); and

.6 Confirmation of all required training, product warranties, operating manuals, instruction manuals and other record documents, drawings, shop drawings, as-builts, and things customarily required of the Contractor.

7.14 The Owner shall, subject to its rights set forth in this Contract, make final payment of all sums due the Contractor within thirty (30) days of the Owner's execution of a final approval for payment and receipt of documentation required by Paragraph 7.12, whichever is received later.

ARTICLE 8 INFORMATION AND MATERIAL SUPPLIED BY THE OWNER

8.1 The Owner may assign a Program Manager or Field Representative to represent Owner, identified in Exhibit B.

8.2 The Program Manager or his designee shall be the sole representative of the Owner, College of Western Idaho, and shall have authority to bind Owner only as specifically set forth in this Contract.

8.3 The Owner shall furnish to the Contractor, prior to the execution of this Contract, any and all written and tangible material in its possession concerning conditions below ground at the site of the Project. Such written and tangible material is furnished to the Contractor only in order to make complete disclosure of such material as being in the possession of the Owner and for no other purpose. By furnishing such material, the Owner does not represent, warrant or guarantee its accuracy, either in whole in part, implicitly or explicitly.

8.4 The Owner will secure and pay for all required easements, the plan check fee required by the Division of Building Safety or any other local agency, conditional use permits and any other permits and fees specifically indicated in the Contract Documents to be secured and paid for by the Owner.

8.5 The Owner will provide the Contractor one (1) copy of this complete Contract and/or Drawings, and/or Project Manuals (including Specifications).

ARTICLE 9 STOP WORK ORDER

9.1 In the event the Contractor fails or refuses to perform the Work as required or fails or refuses to correct nonconforming Work, the Owner may instruct the Contractor to stop Work in whole or in part. Upon receipt of such instruction, the Contractor shall immediately stop as instructed by the Owner and shall not proceed further until the cause for the Owner's instructions has been corrected, no longer exists or the Owner instructs that the Work may resume. In the event the Owner issues such instructions to stop, and in the further event that the Contractor fails and refuses within seven (7) days of receipt of same to provide adequate assurance to the Owner that the cause of such instructions will be eliminated or corrected, then the Owner shall have the right, but not the obligation, to carry out the Work with its own forces or with the forces of another contractor, and the Contractor shall be fully responsible and liable for the costs of performing such Work by the Owner. Without

limiting what else might constitute nonconforming Work, the existence of a gross safety violation or other situation or condition that creates, or could imminently create, a threat of serious harm to persons or property, shall constitute nonconforming Work and any order to stop the Work issued for such reason shall not be considered an interference with the Contractor's performance of the Work or its means and methods. The rights set forth herein are in addition to, and without prejudice to, any other rights or remedies the Owner may have against the Contractor.

9.2 Any order to stop the Work issued pursuant to Paragraph 9.1 shall not be used to justify any Claim by the Contractor for additional time or money.

ARTICLE 10 DUTIES, OBLIGATIONS AND RESPONSIBILITIES OF THE CONTRACTOR

In addition to any and all other duties, obligations and responsibilities of the Contractor set forth in this Contract, the Contractor shall have and perform the following duties, obligations and responsibilities to the Owner:

10.1 The Contractor's continuing duties set forth in Paragraph 3.7 are by reference hereby incorporated in this Paragraph 10.1. The Contractor shall not perform Work without adequate plans and specifications or, as appropriate, approved shop drawings or other submittals. If the Contractor performs Work knowing or believing it involves an error, inconsistency or omission in the Contract without first providing written notice to the Owner, the Contractor shall be responsible for such Work and shall pay the cost of correcting same.

10.2 The Contractor shall take field measurements and verify field conditions and shall carefully compare such field measurements and conditions and other information known to the Contractor with the Contract Documents before commencing Work. Errors, inconsistencies or omissions discovered shall be reported to the Owner and the Owner immediately. Such examination, review and comparison shall be a warranty that the Contract Documents are complete and the Project is buildable as described except as reported. Reported errors, inconsistencies or omissions will constitute a request for an interpretation by the Owner and may constitute a Claim pursuant to Article 13 hereof where appropriate.

10.3 The Contractor shall ensure that all Work shall strictly conform to the requirements of this Contract.

10.4 The Work shall be strictly supervised, the Contractor bearing full responsibility for any and all acts or omissions of those engaged in the Work on behalf of the Contractor.

10.5 All labor furnished on this Project shall be competent to perform the tasks undertaken; materials and equipment furnished under the Contract will be new and of high quality unless otherwise required or permitted by the Contract Documents; the Work will be complete, of high quality and free from defects not inherent in the quality required or permitted; and the Work will strictly conform to the requirements of the Contract Documents. Any Work not strictly conforming to these requirements, including substitutions not properly approved and authorized, shall be considered defective.

10.6 Except as provided in Paragraph 8.4 the Contractor shall secure or provide and pay for all licenses, permits required by the Idaho Division of Building Safety, local government building permits, approvals and inspections, connections for outside services for the use of municipal or private property for storage of materials, parking, utility services, temporary obstructions, enclosures or opening and patching of streets, and for all other facilities and services necessary for proper execution and completion of the Project.

10.7 The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities bearing on performance of the Work.

10.8 The Contractor shall employ and maintain at the Project site only competent supervisory personnel. Key supervisory personnel assigned by the Contractor to this Project are as listed in Exhibit B.

10.9 The Contractor shall employ a competent superintendent and necessary assistants, as needed, to oversee execution of the Work. The superintendent shall be in attendance at the Project site during the progress of the Work The superintendent and any project manager, if the Contractor utilizes a project manager, shall be reviewed and must be approved by the Owner, and neither shall be changed except with the consent of the Owner, unless the superintendent and/or project manager cease to be employed by the Contractor. Under this circumstance, any new superintendent or new project manager must be satisfactory to the Owner. Such approval shall not be unreasonably withheld. The superintendent and any project manager shall represent the Contractor and all communications given to the superintendent or project manager are deemed given to the Contractor.

10.10 So long as the individuals named above remain actively employed or retained by the Contractor, they shall perform the functions indicated next to their names unless the Owner agrees to the contrary in writing. In the event one or more individuals not listed in Paragraph 10.9 subsequently assumes one or more of those functions listed in Paragraph 10.9, the Contractor shall be bound by the provisions of this paragraph as though such individuals had been listed in Paragraph 10.9.

10.11 The Contractor shall provide to the Owner a schedule for completing the Work within a reasonable time, as agreed to by the Contractor and the Owner. The schedule must be submitted to and accepted by the Owner prior to the first request for payment unless required earlier by the Specifications. The Contractor's schedule must be updated as required by the Owner to reflect conditions encountered and shall apply to the total Project. The Contractor's revisions to the schedule shall not constitute a waiver of the requirement to complete the Project in a timely manner or a manner allowed by the Contract, unless additional time for performance has been allowed pursuant to a Change Order. Any changes in milestone begin or end dates must be furnished to the Owner. Strict compliance with the requirements of this Paragraph shall be a condition precedent to the payment to the Contractor and failure by the Contractor to strictly comply with said requirements shall constitute a material breach of this Contract.

10.12 Critical Path Method (CPM) -Unless otherwise provided in the Construction Documents, on all projects where the Contract Amount is over $1,000,000, the Contractor shall schedule and perform the Work in accordance with a Critical Path Method (“CPM”) to indicate the rate of progress and practical order of the Project. The purpose of this scheduling requirement is to assure adequate planning, coordination and execution of the Work. The schedule shall indicate the dates for starting and completing major work activities, project events, major equipment, material and equipment submittals and delivery of major items. Project activities having critical time restraints on action, required by the Owner, shall be shown as scheduled milestones. The Contractor's schedule shall demonstrate the order, interdependence and sequence of activities. Critical paths shall be highlighted or distinguished. The schedule shall include all the dates specified in the Contract for Substantial Completion and final completion of the Work. The time limit set forth in the Contract for Substantial Completion and final completion must govern; the schedule must be adjusted to meet these dates. Schedule float shall belong to the Project. The Contractor shall submit to the Owner and Design Professional a CPM schedule within three (3) weeks after award of the Contract and maintain such schedule on a current basis in accordance with the Contract Documents.

10.13 Once a month, or at intervals as required by the Owner, the Contractor shall advise the Owner of the status of the Work (in duplicate) on the current schedule. If any project dates are not met on schedule, the Contractor shall immediately advise the Owner in writing of the proposed action to bring the Work on schedule. The Contractor shall also submit a detailed short term schedule, as required by the Specifications. This short term schedule shall include a description of current and anticipated problem areas, delaying factors and their impact, and explanation of corrective action taken or proposed. If the Work is behind schedule, the Contractor shall indicate what measures it will take to put the Work back on schedule.

10.14 If the Work is not progressing through no fault of the Owner, as shown on the schedule, as determined by the Owner, and the Owner does not believe the Contractor's proposed action to bring the Work on schedule is adequate, then the Contractor shall be deemed in default under this Contract and the progress of the Work shall be deemed unsatisfactory. In such event, the Owner, at its discretion, may require the Contractor to work such additional time over regular hours, including Saturdays, Sundays and holidays, without additional cost to the Owner to bring the Work on schedule.

10.15 The Contractor shall keep an updated copy of the Drawings and Project Manual (including Specifications) and Addenda at the site. Additionally, the Contractor shall keep a current submittal schedule and a copy of approved shop drawings and other submittals. All of these items shall be available to the Owner at all regular business hours. Upon final completion of the Work, all of these items must be updated by the Contractor and provided to the Owner and shall become the property of the Owner.

10.16 The Contractor shall carefully review and inspect for compliance with the Contract Documents, the shop drawings and other submittals (including product data and samples) required by the Contract Documents and shall submit to the Owner only submittals approved in accordance with this section. Such review and submittal shall be done promptly and in a sequence that will not delay its Work under this Contract or the activities of the Owner or of separate contractors. Shop drawings and other submittals from the Contractor do not constitute a part of the Contract. The Contractor shall not do any work requiring shop drawings or other submittals unless the Owner has verified compliance in writing. All Work requiring verified shop drawings or other submittals shall be done in strict compliance with such approved documents. However, verification of compliance by the Owner shall not be evidence that Work installed pursuant thereto conforms with the requirements of this Contract. The Owner shall have no duty to review submittals that are not Contractor approved, partial submittals or incomplete submittals. The Contractor shall maintain a submittal log which shall include, at a minimum, the date of each submittal, the date of any re-submittal, the date of any approval or rejection and the reason for any rejection.

10.17 The Contractor shall maintain the Project site in a reasonably clean condition during performance of the Work. Upon final completion, the Contractor shall thoroughly clean the Project site of all debris, trash and excess materials or equipment.

10.18 At all times relevant to this Contract, the Owner, the Owner’s representative and the Design Professional shall have a right to enter the Project site and the Contractor shall allow the Owner and/or the Design Professional to review or inspect the work without formality or other procedure.

10.19 The presence or duties of the Design Professional’s or the Owner's representatives at the construction site, does not make any of them responsible for those duties that belong to the Contractor or other entities and does not relieve the Contractor or any other entities of their obligations, duties and responsibilities, including any obligation or requirement to have or to implement any health or safety plans or precautions. Except as provided in Paragraph 10.9, Design Professional's and Owner's representatives have no authority to exercise any control over any Contractor or other entities or their employees in connection with their work or any health or safety precautions and have no duty for inspecting, noting, observing, correcting or reporting on health or safety deficiencies of the Contractor or other entities or any other persons at the site except their own personnel. The presence of Design Professional’s or Owner's representative at a construction site is for the purpose of providing to Owner a greater degree of confidence that the completed Work will conform to the Contract Documents and that the integrity of the design concept as reflected in the Contract Documents has been implemented and preserved by the Contractor. For this Contract only, construction sites include places of manufacture for materials incorporated into the construction Work and Contractor includes manufacturers of materials incorporated into the construction Work.

ARTICLE 11 DUTIES, OBLIGATIONS AND RESPONSIBILITIES OF THE OWNER

The Owner for this Project is identified in Exhibit B, incorporated herein by reference, along with any authorized representatives and any limitation of responsibility. The duties, obligation and responsibilities of the Owner shall be for contract administration and include the following:

11.1 The Owner shall draft proposed change authorization(s).

11.2 The Owner shall review and verify compliance or respond otherwise as necessary concerning shop drawing or other submittals received from the Contractor.

11.3 The Owner shall be authorized to refuse to accept Work that is defective or otherwise fails to comply with the requirements of the Contract. If the Owner deems it appropriate, the Owner may, require extra inspections or testing of the Work for compliance with the requirements of this Contract.

11.4 The Owner shall review the Contractor's Request for Payment and shall verify in writing those amounts which are properly owing to the Contractor as provided in the Contract.

11.5 The Owner may require the Contractor to make changes which do not involve a change in the Contract Amount or in the Contract Time consistent with the intent of this Contract. Such changes shall be given to the Contractor in writing under signature of the Owner, and may be in the form of a supplemental instruction

11.6 The Owner shall review and evaluate Claims and take other actions related to Claims in accordance with Articles 13 and 14.

ARTICLE 12 THE DESIGN PROFESSIONAL

If a Design Professional is utilized for the Project, they shall be identified in Exhibit B, incorporated herein by reference. For the purpose of this Contract, the "Design Professional" means the properly licensed architect, properly registered professional engineer or other professional licensed in the State of Idaho who prepared the Drawings and Specifications for this Project. If the employment of the Design Professional is terminated, the Owner may retain a replacement professional and the role of the replacement professional shall be the same as the role of the Design Professional. Unless otherwise directed by the Owner in writing, the Design Professional will perform those duties and discharge those responsibilities allocated to the Design Professional in this Contract. The duties, obligations and responsibilities of the Design Professional shall for contract administration and include the following:

12.1 Unless otherwise directed by the Owner in writing, the Design Professional shall not act as the Owner's agent.

12.2 Unless otherwise directed by the Owner in writing, the Owner and the Contractor shall communicate with each other through the Design Professional.

12.3 When requested by the Owner or Contractor in writing, the Design Professional shall within seven (7) days render written interpretations necessary for the proper execution or progress of the Work or shall provide a written explanation as to why more time is needed and provide a date by which it will be provided.

12.4 The Design Professional shall draft proposed change authorization(s).

12.5 The Design Professional shall review and verify compliance or respond otherwise as necessary concerning shop drawings or other submittals received from the Contractor.

12.6 The Design Professional shall be authorized to refuse to accept Work that is defective or otherwise fails to comply with the requirements of this Contract. If the Design Professional deems it appropriate, the Design Professional may, with the Owner's consent, require extra inspections or testing of the Work for compliance with the requirements of this Contract.

12.7 The Design Professional shall review the Contractor's Request for Payment and shall verify in writing those amounts which, in the opinion of the Design Professional, are properly owing to the Contractor as provided in this Contract.

12.8 The Design Professional shall, upon written request from the Contractor, perform Substantial Completion and final completion inspections contemplated by Article 6.

ARTICLE 13 INDEMNITY

13.1 The Contractor shall defend, indemnify and hold harmless the Owner and their representatives, employees, officers and agents, and the Design Professional and their employees harmless from any and all claims, liabilities, damages, losses, costs and expenses of every type whatsoever, including attorney fees and expenses, arising out of or resulting from the Contractor's work, acts or omissions under or related to the Contract Documents, to the extent caused by the Contractor, or anyone for whose acts the Contractor may be liable, regardless of whether such liability, claim, damage, loss, cost or expense is caused in part by the Owner.

13.2 The limits of any insurance of the Contractor shall not be, and shall not be deemed to be, a limitation of the Contractor's defense and indemnity obligations contained in this Article.

13.3 In claims against any person or entity indemnified under this Article 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 this Article 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' or workmen's compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 14 CLAIMS AND RESOLUTION

14.1 For purposes of this Contract, a "Claim" means a demand by the Contractor to the Owner, or by the Owner to the Contractor, for a change in the Contract Amount, an extension of the Contract Time, an adjustment to or interpretation of the Contract terms, or other relief with respect to the terms of the Contract, which demand the Contractor or Owner asserts is required or allowed under the Contract Documents and which the Contractor and the Owner have previously discussed and failed to agree upon.

14.2 For the Claim to be considered, it must meet the following requirements:

.1 The Claim must be in writing;

.2 The Claim by the Contractor must be signed by an authorized representative of the Contractor, and the Claim by the Owner must be signed by an authorized representative of the Owner;

.3 The Claim by the Contractor must be provided to the Owner and the Claim by the Owner must be provided to the Contractor;

.4 The Claim must be made no later than ten (10) days after the event or first appearance of the circumstance giving rise to the Claim;

.5 The Claim must describe in detail all known facts and circumstances that the Contractor or Owner asserts support the Claim;

.6 The Claim must refer to the provision(s) of the Contract Documents that the Contractor or Owner asserts support the Claim;

.7 The Contractor or Owner must provide all documentation or other information to substantiate the Claim; and

.8 The Contractor or Owner must continue its performance under this Contract pending the resolution of any Claim; provided, however, that the Contractor shall not perform any additional or changed work not otherwise authorized in accordance with the Contract Documents.

14.3 The failure by the Contractor to meet any of the requirements of Paragraph 14.2 shall constitute a complete wavier by the Contractor of any rights arising from or related to the Claim. Similarly, the failure by the Owner to meet any of the requirements of Paragraph 14.2 shall constitute a complete waiver by the Owner of any rights arising from or related to the Claim.

14.4 If the Claim is made based on concealed or unknown site conditions, the following shall apply in addition to all other provisions applicable to the Claim:

.1 The condition must have been previously concealed and unknown or of a type not ordinarily encountered in the general geographic location of the Project and must not have been reasonably susceptible to discovery; and

.2 The Contractor shall notify the Owner and the Design Professional of the condition and shall not disturb the condition until the Owner and the Design Professional have observed it or have waived in writing the right to observe it.

14.5 If the Claim by the Contractor is for an increase in the Contract Amount, the following shall apply in addition to all other provisions applicable to the Claim:

.1 Any increase in the Contract Amount shall be strictly limited to the direct costs incurred by the Contractor and shall not include any other costs, indirect or other, including any costs for or related to lost productivity, profit, home office overhead and any other overhead, legal fees, claim preparation, any matter previously resolved by a change order, equipment costs, costs related to the services of a project manager unless the project manager was required full time by the Owner or the Contract Documents and any costs associated with the failure to complete the Work early or in advance of the date required by the Contract Documents; and

.2 The Owner shall have no liability for, and the Contract Amount shall not be increased related to, any claims of third parties, including subcontractors, unless and until the liability of the Contractor for such has been established in a court of competent jurisdiction and any such liability of the Owner shall be limited in the same manner as described in subparagraph .1.

14.6 If the Claim by the Owner is for a change in the Contract Amount, all other applicable provisions to the Claim apply.

14.7 If the Claim by the Contractor is for an extension of the Contract Time, the following shall apply in addition to all other provisions applicable to the Claim:

.1 The Contractor has been delayed in its performance by an act or omission of the Owner and through no fault of the Contractor;

.2 The Contractor has been delayed in its performance by unusually severe weather that could not reasonably have been anticipated or by another event not within its reasonable control;

.3 At the time it occurs or during its occurrence, the delay will preclude completion of the Project in the time required by the Contract Documents; and

.4 Any extension of the Contract Time shall be the Contractor's sole and exclusive remedy for any delay except a delay caused by the active interference of the Owner with the Contractor's performance which active interference continues after written notice to the Owner. The Owner's exercise of any of its rights or remedies under this Contract, including ordering changes in the Work, directing suspension, rescheduling or correction of the Work, do not constitute active interference.

14.8 If a Claim is made based on an error, inconsistency or omission in the Contract that was reasonably susceptible to discovery by the Contractor and was not reported in accordance with Paragraph 2.3, that Claim shall be denied.

14.9 All Claims made by the Contractor in accordance with Article 14 shall be reviewed and evaluated by the Owner. All claims made by the Owner in accordance with Article 14 shall be reviewed and evaluated by the Contractor. If the Claim is not made in strict accordance with Article 14, it shall be rejected as waived. Any failure by the Owner to reject the Contractor's Claim for failure to meet the requirements of Article 14 is not binding on the Owner and the Owner may reject the Contractor's Claim for such failure. Any failure by the Contractor to reject the Owner's Claim for failure to meet the requirements of Article 14 is not binding on the Contractor, and the Contractor may reject the Owner's Claim for such failure.

14.10 No later than seven (7) days from receipt of the Claim by the Owner or Contractor, the parties shall:

.1 Make a written request for more data to support the Claim;

.2 Attempt to facilitate resolution of the Claim through informal negotiations; or

.3 If the Claim is by the Contractor, make a written recommendation to the Owner, with a copy to the Contractor, that the Owner reject or approve all or part of the Claim and state the reasons for the Design Professional's recommendation. If the Claim is by the Owner, make a written recommendation to the Contractor, with a copy to the Owner, that the Contractor reject or approve all or part of the Claim and state the reasons for the Design Professional's recommendation.

14.11 If the Owner or Contractor requests more data from the other party under subparagraph 14.2.1, the Owner or Contractor shall respond no later than seven (7) days from receipt of such request, and provide additional data, provide a date certain by which additional data will be provided, or state that it will not provide additional data. Upon receipt of data, if any, in accordance with this section, the Owner or Contractor will complete the evaluation of the Claim. Failure to respond at all or failure to provide data by the date specified in the response to the request shall result in the Claim being evaluated based on the information in the Owner's or Contractor's possession.

14.12 In evaluating the Contractor's Claim, the Owner may consult with other persons with knowledge or expertise that may assist the Owner in its evaluation. In evaluating the Owner's Claim, the Contractor may consult with other persons with knowledge or expertise that may assist the Contractor in its evaluation.

14.13 No later than fourteen (14) days after receipt of the Contractor's Claim, the Owner shall, in writing, notify the Contractor of its decision regarding the Claim. No later than fourteen (14) days after receipt by the of the Owner's Claim, the Contractor shall, in writing, notify the Owner of its decision regarding the Claim.

14.14 The Owner's decision regarding the Contractor's Claim is binding on the Owner and the Contractor but is subject to mediation in accordance with this Contract, and the Contractor's decision regarding the Owner's Claim is binding on the Owner and the Contractor but is subject to mediation in accordance with this Contract.

ARTICLE 15 SUBCONTRACTORS

15.1 Upon issuance of a Work Order or Notice to Proceed (NTP) by the Owner, the Contractor shall identify to the Owner, in writing, those parties intended as subcontractors on a Project not otherwise named in the Contractor's bid. The Owner shall, in writing, state any objections the Owner may have to one or more of such subcontractors. The Contractor shall not enter into a subcontract with an intended subcontractor with reference to whom the Owner objects. All subcontracts shall afford the Contractor rights against the subcontractor which correspond to those rights afforded to the Owner against the Contractor herein, including those rights of Contract Termination as set forth in this Contract. All subcontractors shall, throughout the duration of this Contract, be properly licensed as Idaho Public Works Contractors.

15.2 The Contractor conditionally assigns each of its subcontracts related to the Project to the Owner. All subcontracts between the Contractor and the subcontractors shall obligate the subcontractor to such conditional assignment. Upon a Termination by the Owner for cause under Paragraph 20.1, the Owner may accept such conditional assignment by written notification to the applicable subcontractor and to the Contractor. Such acceptance is subject to the rights of the Surety, if any, relating to the Contract.

ARTICLE 16 CHANGES IN THE WORK

16.1 General

.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 and elsewhere in the Contract Documents; and

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

16.2 Change Orders

.1 A "Change Order" is a written instrument prepared by the Design Professional, Owner or Owner's representative and signed by the Owner, Contractor and Owner, stating their agreement upon: a change in the work, any adjustment in the Contract Amount and any adjustment in the Contract Time;

.2 Methods used in determining adjustments to the Contract Amount may include those listed in subparagraph 16.3.4;

.3 The amount allowed for overhead and profit on any Change Order is limited to the amounts indicated in subparagraph 16.3.11;

.4 Any Change Order prepared, including those arising by reason of the parties' mutual agreement or by mediation, shall constitute a final and full settlement of all matters relating to or affected by the change in the Work, including all direct, indirect and consequential costs associated with such change and any and all adjustments to the Contract Amount and Contract Time. In the event a Change Order increases the Contract Amount, the Contractor shall include the Work covered by such Change Order in

the Contractor's Request for Payment as if such Work were originally part of the Project and Contract Documents; and

.5 By the execution of a Change Order, the Contractor agrees and acknowledges that it has had sufficient time and opportunity to examine the change in Work which is the subject of the Change Order and that it has undertaken all reasonable efforts to discover and disclose any concealed or unknown conditions which may to any extent affect the Contractor's ability to perform in accordance with the Change Order. Aside from those matters specifically set forth in the Change Order, the Owner shall not be obligated to make any adjustments to either the Contract Amount or Contract Time by reason of any conditions affecting the change in Work addressed by the Change Order, which could have reasonably been discovered or disclosed by the Contractor's examination.

16.3 Construction Change Directive (CCD)

.1 A "Construction Change Directive" is a written order prepared by the Design Professional, Owner or Owner's representative and signed by the Owner and directing a change in the Work prior to agreement on adjustment, if any, in the Contract Amount 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 Amount and Contract Time being adjusted accordingly;

.2 A Construction Change Directive, within limitations, may also be used to incorporate minor changes in the Work agreed to by the designated CWI Program Manager, the Owner's representative and the Contractor's superintendent or project manager. The limits of these representatives' authority with regard to Construction Change Directives shall be documented in writing by the Owner and Contractor;

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

.4 If the Construction Change Directive provides for an adjustment to the Contract Amount, the adjustment shall be based on one (1) 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 subparagraph 16.3.7;

.5 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Owner or Owner's representative in writing within forty-eight (48) hours 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 Amount or Contract time.

.6 A Construction Change Directive signed by the Contractor indicates the agreement of the Contractor therewith, including adjustment in Contract Amount and Contract Time or the method for

determining them. Such agreement shall be effective immediately and shall be incorporated into a future change Order;

.7 If the Contractor does not respond promptly or disagrees with the method for adjustments in the Contract Amount or Contract Time, the method and the adjustment shall be determined by the Design Professional 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 Amount, an allowance for overhead and profit in accordance with subparagraph 16.3.11. In such case of an increase in Contract Amount, and also under subparagraph 16.3.4, the Contractor shall keep and present, in such form as the Design Professional may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this subsection shall be limited to the following:

.1) Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom and workers' compensation insurance;

.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 permit fees and sales, use or similar taxes related to the Work; and

.5) Additional costs of supervision and field office personnel directly attributable to the change;

.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change which results in a net decrease in the Contract Amount shall be for the actual net cost of the decrease, confirmed by the Owner. 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;

.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in the Contractor's Request for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs;

.10 When the Owner and Contractor agree with the determination by the Design Professional concerning the adjustments in the Contract Amount and Contract Time, or otherwise reach shall be recorded by preparation and execution of an appropriate Change Order; and

.11 For purposes of subparagraphs 16.2.3 and 16.3.7, the allowance for combined overhead, profit, bonds and insurance shall be limited as follows, unless otherwise provided in the Contract Documents:

.1) For total changes of $10,000 or less in direct cost, the amount of overhead, profit, bonds and insurance for the Contractor and all subcontractors of any tier combined shall not exceed twenty percent (20%) of direct costs;

.2) For total changes exceeding $10,000 in direct cost, the amount allowed for overhead, profit, bonds and insurance for the Contractor and all subcontractors of any tier combined shall not exceed fifteen percent (15%) of direct costs; or

.3) The Contractor will determine the apportionment between the Contractor and its subcontractors of allowable amounts of overhead, profit, bonds and insurance.

16.4 The Owner will have authority to order minor changes in the Work not involving adjustment in the Contract Amount or extension of the Contract Time and not inconsistent with the intent of the Contract Documents. Such changes shall be effected by written order and shall be binding on the Owner and Contractor. The Contractor shall carry out such written orders promptly.

ARTICLE 17 DISCOVERING AND CORRECTING DEFECTIVE OR INCOMPLETE WORK

17.1 If the Contractor covers, conceals or obscures its Work in violation of this Contract or in violation of a directive or request from the Owner or Owner's representative, such Work shall be uncovered and displayed for the Owner's inspection upon request and shall be reworked at no cost in time or money to the Owner.

17.2 If any of the Work is covered, concealed or obscured in a manner not addressed by Paragraph 17.1, it shall, if directed by the Owner or Owner's representative to be uncovered and displayed for the Owner's inspection. If the uncovered Work conforms strictly with this Contract, the costs incurred by the Contractor to uncover and subsequently replace such Work shall be borne by the Owner. Otherwise, such costs shall be borne by the Contractor.

17.3 The Contractor shall, at no cost in time or money to the Owner, promptly correct Work (fabricated, installed or completed) rejected by the Owner or Owner's representative as defective or that fails to conform to this Contract whether discovered before or after Substantial Completion. Additionally, the Contractor shall reimburse the Owner for all testing, inspections and other expenses incurred as a result thereof.

17.4 In addition to any other warranty obligations in this Contract, the Contractor shall be specifically obligated to correct, upon written direction from the Owner or Owner's representative, any and all defective or nonconforming Work for a period of twelve (12) months following Substantial Completion.

17.5 The Owner may, but shall not be required to, choose to accept defective or nonconforming Work. In such event, the Contract Amount shall be reduced by the lesser of: (i) the reasonable costs of removing and correcting the defective or nonconforming Work; or (ii) the difference between the fair market value of the Project as constructed and the fair market value of the Project had it not been constructed in such a manner as to include defective or nonconforming Work. If the remaining portion of the unpaid Contract Amount, if any, is insufficient to compensate the Owner for the acceptance of defective or nonconforming Work, the Contractor shall, upon written demand from the Owner, pay the Owner such remaining compensation for accepting defective or nonconforming work.

ARTICLE 18 TERMINATION BY THE CONTRACTOR

18.1 The Contractor may terminate the Contract if the Work is stopped for a period of ninety (90) consecutive days through no act or fault of the Contractor or a subcontractor, sub-subcontractor or their agents or employees or any other persons or entities performing portions of the Work under direct or indirect contract with the Contractor, for any of the following reasons:

.1 Issuance of an order by a court or by another public authority having jurisdiction and authority which requires all Work to be stopped; or

.2 An act of government, such as a declaration of national emergency, which requires all Work to be stopped.

18.2 In such event, the Contractor shall be entitled to recover from the Owner as though the Owner had terminated the Contractor's performance under this Contract pursuant to Paragraph 20.3.

ARTICLE 19 OWNER'S RIGHT TO SUSPEND CONTRACTOR'S PERFORMANCE

19.1 The Owner may, at any time and 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. If the Owner directs any such suspension, the Contractor must immediately comply with same.

19.2 In the event the Owner directs a suspension of performance under this Article, and such suspension is through no fault of the Contractor, the Contract Amount and Contract Time shall be adjusted for increases in the cost and time caused by such suspension, delay or interruption to cover the Contractor's reasonable costs, actually incurred and paid, of:

.1 Demobilization and remobilization, including such costs paid to subcontractors;

.2 Preserving and protecting Work in place;

.3 Storage of materials or equipment purchased for the Project, including insurance thereon; and

.4 Performing in a later, or during a longer, time frame than that provided by this Contract.

19.3 The adjustment of the Contract Amount shall include an amount for a reasonable profit. The adjustment of the Contract Amount shall not include any amount not otherwise allowed under this Contract, including any limitations applicable to Claims. The Contractor shall provide supporting documentation related to any increase upon request of the Owner. 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; or

.3 Reasonable costs of settling and paying Claims arising out of the Termination of subcontracts or orders pursuant to this Paragraph 20.3.

ARTICLE 20 TERMINATION BY THE OWNER

The Owner may terminate this Contract in accordance with the following terms and conditions:

20.1 If the Contractor does not perform the Work, or any part thereof, in accordance with the Contract Documents, or in a timely manner; does not supply adequate labor, supervisory personnel, or proper equipment or materials; fails to pay subcontractors; fails to timely discharge its obligations for labor, equipment, and materials; proceeds to disobey applicable law; or otherwise breaches this Contract, then the Owner, in addition to any other rights it may have against the Contractor, may terminate the Contract and assume control of the Project site and of all materials and equipment at the site and may complete the Work. In such case, the Contractor shall not be paid further until the Work is complete. Upon such Termination, the Owner may, subject to any superior rights of the Surety, take possession of the site and of all materials, equipment, tools and construction equipment and machinery thereon owned by the Contractor; accept assignment of those

subcontracts conditionally assigned under Paragraph 15.2; and finish the Work by whatever reasonable method the Owner may deem expedient.

20.2 When the Owner terminates the Contract for cause as provided in Paragraph 20.1, the Contractor shall not be entitled to receive further payment until the Work is finished and shall only be entitled to payment for Work satisfactorily performed by the Contractor in accordance with the Contract Documents. If the costs of finishing the Work, including any compensation for changes in Design Professional's services and expenses, exceed the unpaid balance, the Contractor shall pay the difference to the Owner. This obligation for payment shall survive termination of the Contract. The Contractor shall also terminate outstanding orders and subcontracts. The Contractor shall settle the liabilities and Claims arising out of the termination of subcontracts and orders. In the event the Contractor is terminated by the Owner for cause pursuant to Paragraph 20.1 and it is subsequently determined by a court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination under Paragraph 20.3 and the provisions of Paragraph 20.3 shall apply.

20.3 The Owner may, at any time and for any reason, terminate this Contract. The Owner shall give no less than seven (7) days' written notice of such Termination to the Contractor specifying when termination becomes effective. The Contractor shall incur no further obligations in connection with the Work and the Contractor shall stop Work when such Termination becomes effective. The Contractor shall also terminate outstanding orders and subcontracts. The Contractor shall settle the liabilities and Claims arising out of the Termination of subcontracts and orders. The Owner may direct the Contractor to assign the Contractor's right, title and interest under termination orders or subcontracts to the Owner or its designee. The Contractor shall transfer title and deliver to the Owner such completed or partially completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has. When terminated pursuant to this section, the following shall apply:

.1 The Contractor shall submit a Termination Claim to the Owner specifying the amounts claimed due because of the Termination, together with costs, pricing or other supporting data required by the Owner. Failure by the Contractor to file a Termination Claim within ninety (90) days from the effective date of Termination shall be deemed a complete waiver by the Contractor of any right to any payment;

.2 Before or after receipt of the Termination Claim, the Owner and the Contractor may agree to the compensation, if any, due to the Contractor hereunder; and

.3 If the Contractor has filed the Termination Claim but the Contractor and the Owner do not agree on an amount due to the Contractor, the Owner shall pay the Contractor the following amounts:

.1) Unpaid Contract amounts for labor, materials, equipment and other services provided or perfected prior to termination and acceptable to or accepted by the Owner;

.2) Reasonable costs incurred in preparing to perform the terminated portion of the Work, and in terminating the Contractor's performance, plus a fair and reasonable allowance for direct job-site overhead and profit related to such preparation (such profit shall not include anticipated profit or consequential damages); provided, however, that if it appears that the Contractor would have not profited or would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated loss, if any; and

.3) Reasonable costs of settling and paying Claims arising out of the Termination of subcontracts or orders pursuant to this Paragraph 20.3.

20.4 Costs described in subparagraphs 20.3.3.2 or 20.3.3.3 shall not include amounts paid in accordance with other provisions hereof. In no event shall the total sum to be paid the Contractor under subparagraph 20.3.3 exceed the total Contract Amount, as properly adjusted, reduced by the amount of payments previously or otherwise made and by any other deductions permitted under this Contract and shall in no event include duplication of payment.

ARTICLE 21 CONTRACTOR'S LIABILITY INSURANCE

21.1 The Contractor, subcontractor and sub-subcontractor shall purchase and maintain in full force and effect from a company or companies lawfully authorized to do business in the State of Idaho such insurance as will protect the Contractor, subcontractor and sub-subcontractor from claims set forth below which may arise out of or result from the Contractor's or subcontractor's operations under the Contract and for which the Contractor may be legally liable, whether such operations be by the Contractor or by a subcontractor or by anyone directly or indirectly employed by any of them or by anyone for whose acts any of them may be liable:

.1 Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts which are applicable to the work to be performed;

.2 Claims for damages because of bodily injury, occupational sickness or disease or death of the Contractor's employees;

.3 Claims for damages because of bodily injury, sickness or disease or death of any person other than the Contractor's employees;

.4 Claims for damages insured by usual personal injury liability coverage which are sustained: (i) by a person as a result of an offense directly or indirectly related to employment of such person by the Contractor; or (ii) by another person;

.5 Claims for damages, other than to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting there from;

.6 Claims for damages because of bodily injury, death of a person or property damage arising out of ownership, maintenance or use of a motor vehicle;

.7 Claims for bodily injury or property damage arising out of completed operations; and

.8 Claims involving contractual liability insurance applicable to the Contractor's obligations under Article 12.

21.2 The insurance required by Paragraph 21.1 above shall be written for not less than limits of liability specified in this Contract or as required by law, whichever is greater. Coverage's, whether written on an occurrence or claims- made basis, shall be maintained without interruption from date of commencement of the Work until date of final payment and termination of any coverage required to be maintained after final payment. In addition, for any insurance required that is obtained on a claims-made basis, "tail coverage" is required at the completion of the work for twenty-four (24) months. Continuous claims-made coverage will be acceptable in lieu of "tail coverage" provided the retroactive date is on or before the effective date of this Contract or twenty-four (24) months "prior acts" coverage is provided.

.1 The insurance required by Paragraph 21.1 above shall be written for not less than the following limits:

.1) *Workers Compensation and Employer's Liability*:

(a) State Workers Compensation: Statutory

(b) Employer's Liability: $100,000 per Accident

$500,000 Disease, Policy Limit

$100,000 Disease, Each Employee

.2) *Comprehensive Commercial General Liability* and *Umbrella Liability Insurance*: Contractor shall maintain Commercial General Liability ("CGL") and, if necessary, commercial umbrella insurance with a limit of not less than $1,000,000.00 each occurrence. If such CGL insurance contains a general aggregate limit, it shall apply separately to this project location;

CGL insurance shall be written on Insurance Services Office ("ISO") occurrence form CG 00 01 12 04 or a substitute form providing equivalent coverage and shall cover liability arising from premises, operation, independent contractors, products-completed operations, personal (including employee acts) and advertising injury and liability assumed under an insured contract (including the tort liability of another assumed in a business contract);

Owner shall be included as an additional insured under the CGL, using ISO additional insured endorsement CG 20 10 and CG 20 37 or their equivalent, which endorsement shall include coverage for the Owner with respect to liability arising out of the Work, including completed operations of Contractor, and which coverage shall be maintained in effect for the benefit of Owner for a period of two (2) years following the completion of the work specified in this Contract. Additional insured coverage as required in this subparagraph shall apply as primary insurance with respect to any other insurance or self-insurance programs afforded to the Owner;

(a) For the hazards of explosion, collapse, and damage to underground property, commonly referred to as XCU, coverage shall be required if the exposures exist; and

This coverage may be provided by the subcontractor if the Owner and prime Contractor are named as additional insureds;

.3) *Business Auto and Umbrella Liability Insurance:* Contractor shall maintain business, auto liability and, if necessary, commercial umbrella liability insurance with a limit of not less than $1,000,000 each accident;

Such insurance shall cover liability arising out of any auto (including owned, hired, and non-owned autos);

Business auto coverage shall be written on ISO form CA 00 01, CA 00 05, CA 00 12, CA 00 20 or a substitute form providing equivalent liability coverage;

If hazardous waste will be hauled, Contractor shall obtain *pollution liability coverage* equivalent to that provided under the ISO pollution liability-broadened coverage for covered autos endorsement (CA 99 48) and the Motor Carrier Act endorsement (MCS 90) shall be attached;

.4) If the General Liability coverage is provided by Commercial Liability policies the:

.1 General Aggregate shall be not less than $2,000,000; and

.2 Fire legal liability shall be provided in an amount not less than $100,000 per occurrence; and

.5) Umbrella Excess Liability. An umbrella policy may be used in combination with other policies to provide the required coverage.

21.3 The Owner shall be named as additional insured or loss payee, as applicable, on the insurance required in subparagraphs 21.2.1.2, 21.2.1.3 and 21.2.1.5 above, and the insurance shall contain the severability of interest clause as follows:

"The insurance afforded herein applies separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the company's 'liability. "

21.4 The Contractor may include all subcontractors as insured parties under the Contractor's policies in lieu of separate policies by each subcontractor. The Contractor must furnish the College of Western Idaho, with the required endorsements or certificates of insurance from each subcontractor which names of the subcontractor, its officials, employees and volunteers as insured parties.

21.5 Certificates of Insurance for Workers' Compensation shall be on the standard form. Certificates of Insurance for Commercial or Comprehensive General Liability shall be the most current ACORD Form 25 or 28, must be acceptable to the Owner and shall be filed with the Owner prior to commencement of the Work. The Owner may require proof of coverage by an endorsement. The certificates, or endorsements if required, and the insurance policies required by this Article shall contain a provision that coverage afforded under the policies will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to the Owner. If any of the foregoing insurance coverage 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 Contractor's Request for Payment as required by Article 7. Information concerning reduction of coverage shall be furnished by the Contractor with reasonable promptness in accordance with the Contractor's information and belief.

ARTICLE 22 OWNER'S LIABILITY INSURANCE

The Owner, at its option, may purchase or maintain insurance for protection against claims which may arise from operations under the Contract.

ARTICLE 23 PROPERTY INSURANCE

23.1 Unless otherwise provided, the Owner shall purchase or maintain, from a company or companies lawfully authorized to do business in the State of Idaho, *property insurance* in an amount not less than the Contract Amount. Such property insurance shall be maintained until final payment to the Contractor has been made. This insurance shall include interests of the Owner, the Contractor, subcontractors and sub-subcontractors.

23.2 Property insurance shall be on an "all-risk" or equivalent policy form and shall include, but not necessarily be limited to insurance against the perils of fire (with extended coverage) and mischief, collapse, earthquake, flood, windstorm, temporary buildings and debris removal, including demolition occasioned by enforcement of any applicable legal requirements, and shall cover necessary and reasonable expenses for the College of Western Idaho representative's expenses required as a result of such insured loss.

23.3 If the property insurance requires deductibles, the Owner shall pay costs of such deductibles.

23.4 *Loss of Use Insurance*. The Owner, at the Owner's option, may purchase and maintain such insurance as will insure the Owner against loss of the Owner's property due to fire or other hazards, however caused surety form certified approved to be the same as the AIA Document A312, and shall be executed by a Surety, or Sureties, reasonably acceptable to the Owner and authorized to do business in the State of Idaho.

23.5 The Contractor authorizes the Owner to negotiate and agree on the value and extent of, and to collect the proceeds payable with respect to, any loss under a policy of insurance carried by the Owner pursuant to any of the provisions of this Article. The Owner shall have full right and authority to compromise any claim, or to enforce any claim by legal action or otherwise, or to release and discharge any insurer, by and on behalf of the Owner and Contractor. The Owner shall provide written notice to Contractor of: (i) its having reached any such settlement or adjustment with an insurer; and (ii) the receipt of any funds pursuant to this Article. Any objection by the Contractor to a settlement or adjustment made under this Article must be made in writing to the Owner within five (5) business days of the notice from the Owner. The Owner and the Contractor agree to attempt to resolve the dispute by mutual agreement.

23.6 A loss under the Owner's property insurance shall be adjusted by the Owner and made payable to the Owner for the insured parties, as their interests may appear, subject to requirements of any applicable mortgagee clause.

23.7 The Owner shall deposit proceeds so received, in a manner in which such proceeds can be separately accounted for, which proceeds the Owner shall distribute in accordance with such agreement as the parties in interest may reach. If after such loss no other special agreement is made and unless the Owner terminates the Contract pursuant to Article 20, replacement of damaged property shall be performed by the Contractor after notification of a Change in the Work in accordance with Article 16.

23.8 The Contractor shall pay subcontractors their shares of the insurance proceeds received by the Contractor, and by appropriate agreements, written where legally required for validity, shall require subcontractors to acknowledge the Owner's authority under this Article 23 and make payments to their sub-subcontractors in similar manner.

23.9 Nothing contained in this Article 23 shall preclude the Contractor from obtaining, solely at its own expense, additional insurance not otherwise required.

ARTICLE 24 PERFORMANCE AND PAYMENT BONDS

24.1 The Contractor shall furnish separate performance and payment bonds to the Owner. Each bond shall set forth a penal sum in an amount not less than the Contract Amount and shall include a power of attorney attached to each bond. The signature of both the Contractor (principal) and the Surety are required. If the Surety is incorporated, both bonds must have the corporate seal. Each bond furnished by the Contractor shall incorporate by reference the terms of this Contract as fully as though they were set forth verbatim in such bonds. In the event the Contract Amount is adjusted by Change Order executed by the Contractor, the penal sum of both the performance bond and the payment bond shall be deemed increased by like amount. The performance and payment bonds furnished by the Contractor shall be AIA Document A312, or a standard surety form certified approved to be the same as the AIA Document A312, and shall be executed by a Surety, or Sureties, reasonably acceptable to the Owner and authorized to do business in the State of Idaho.

24.2 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 permit a copy to be made.

24.3 It is the Contractor's obligation to notify the Surety in the event of changes in the Contract Documents, which in the absence of notification might serve to discharge the Surety's obligations, duties or liability under bonds or the Contract.

ARTICLE 25 PROJECT RECORDS

25.1 All documents relating in any manner whatsoever to the Project, or any designated portion thereof, which are in the possession of the Contractor or any subcontractor of the Contractor, shall be made available to the Owner or the Owner's representative for inspection and copying upon written request. Furthermore, said documents shall be made available, upon request by the Owner, to any state, federal or other regulatory authority and any such authority may review, inspect and copy such records. Said records include all drawings, plans, specifications, submittals, correspondence, minutes, memoranda, tape recordings, videos or other writings or things which document the Project, its design and its construction. Said records expressly include those documents reflecting the cost of construction to the Contractor. The Contractor shall maintain and protect these documents for no less than four (4) years after final completion or Termination of the Contract or for any longer period of time as may be required by law or good construction practice.

ARTICLE 26 MISCELLANEOUS PROVISIONS

26.1 The law is hereby agreed to be the law of the State of Idaho. The parties further agree that venue or any proceeding related to this Contract shall be in Ada County, Idaho, unless otherwise mutually agreed by the parties.

26.2 Pursuant to Section 54-1904A, Idaho Code, within thirty (30) days after a Work Order or Notice to Proceed (NTP) by the Owner, the Contractor shall file with the Idaho State Tax Commission, with a copy to the Owner, a signed statement showing the date of Work Order or NTP, the names and addresses of the home offices of contracting parties, including all subcontractors, the state of incorporation, the Project Number and a general description of the type and location of the Work, the amount of the prime contracts and all subcontracts and all other relevant information which may be required on forms which may be prescribed by the Idaho State Tax Commission. .

26.3 Before entering into a Contract, the Contractor shall be authorized to do business in the State of Idaho and shall submit a properly executed Contractor's Affidavit Concerning Taxes (Exhibit D).

26.4 Pursuant to Section 44-1002, Idaho Code, it is provided that each Contractor "must employ ninety-five percent (95%) bona fide Idaho residents as employees on any job under any such contract except where under such contracts fifty (50) or less persons are employed the contractor may employ ten percent (10%) nonresidents, provided, however, in all cases employers must give preference to the employment of bona fide residents in the performance of said work, and no contract shall be let to any person, firm, association, or corporation refusing to execute an agreement with the above mentioned provisions in it; provided, that, in contracts involving the expenditure of federal aid funds this act shall not be enforced in such a manner as to conflict with or be contrary to the federal statutes prescribing a labor preference to honorably discharged soldiers, sailors, and marines, prohibiting as unlawful any other preference or discrimination among citizens of the United States." (Ref. Section 44-1001, Idaho Code)

26.5 The Contractor shall maintain, in compliance with Title 72, Chapter 17, Idaho Code, a drug-free workplace program throughout the duration of this Contract and shall only subcontract work to subcontractors who have programs that comply with Title 72, Chapter 17, Idaho Code.

26.6 As between the Owner and Contractor as to acts or failures to act, any applicable statute of limitations shall commence to run and any legal cause of action shall be deemed to have accrued in any and all events in accordance with Idaho law.

26.7 The Contractor and its subcontractors and sub-subcontractors shall comply with all applicable Idaho statutes with specific reference to Idaho Public Works Contractors' licensing laws in the State of Idaho, Title 54, Chapter 19, Idaho Code, as amended.

.1 Pursuant to Section 54-1902, Idaho Code the Contractor shall not subcontract in excess of eighty percent (80%) of the Work.

26.8 The Contractor is and shall remain in compliance with Executive Order 2009-10 which requires that the Contractor does not knowingly hire or engage any illegal aliens or persons not authorized to work in the United States and that it takes steps to verify that it does not hire or engage any illegal aliens or persons not authorized to work in the United States. Any misrepresentation in this regard or any employment of persons not authorized to work in the United States constitutes a material breach and shall be cause for the imposition of monetary penalties not to exceed five percent (5%) of the amount per violation and/or Termination of this Contract. The Contractor also acknowledges that, if it is a natural person, it is subject to Title 67, Chapter 79, Idaho Code regarding verification of lawful presence in the United States.

26.9 The Contractor acknowledges that the Owner may review, and ask others involved with the Project to review, the Contractor's performance on the Project. The Contractor further acknowledges that the Owner may use the results of the evaluation in evaluating the Contractor for purposes of awarding future projects.

26.10 This Agreement may be extended for an additional 12-month period at no change in contract amount or conditions if agreed to in writing by the Contractor and the Owner sixty (60) days prior to its expiration. Two such consecutive extensions may be authorized prior to re-bidding.

ARTICLE 27 EQUAL OPPORTUNITY

The Contractor shall maintain policies of employment as follows:

27.1 The Contractor and the Contractor's subcontractors shall not discriminate against any employee or applicant for employment because of race, religion, color, sex, age or national origin. The Contractor shall take affirmative action to insure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, color, sex, age or national origin. Such action shall include the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the policies of non-discrimination.

27.2 The Contractor and the Contractor's subcontractors shall, in all solicitation or advertisements for employees placed by them or on their behalf; state that all qualified applicants will receive consideration for employment without regard to race, religion, color, sex, age or national origin.

ARTICLE 28 SUCCESSORS AND ASSIGNS

28.1 Each party binds itself, its successors, assigns, executors, administrators or other representatives to the other party hereto and to successors, assigns, executors, administrators or other representatives of such other party in connection with all terms and conditions of this Contract. The Contractor shall not assign this Contract or any part of it or right or obligation pursuant to it without prior written consent of the Owner. If Contractor attempts to make assignment without consent of Owner, Contractor shall remain legally responsible for all obligations under this Contract.

ARTICLE 29 SEVERABILITY

29.1 In the event any provision or section of this Contract conflicts with applicable law or is otherwise held to be unenforceable, the remaining provisions shall nevertheless be enforceable and shall be carried into effect.

ARTICLE 30 MEDIATION

30.1 Contractor Claims for additional cost or time are subject to Article 13, shall be reviewed as provided in accordance with that Article and, as a condition precedent to litigation, are subject to dispute resolution attempts and mediation in accordance with this Article. All other issues and disputes arising from this contract are also subject to dispute resolution attempts and mediation in accordance with this Article, as a condition precedent to litigation.

30.2 The parties agree that resolution of any dispute or disagreement without formal legal proceedings is to their mutual benefit and to the benefit of the Project.

30.3 The parties agree to make every reasonable attempt to resolve any issues or disputes informally. The parties further agree that prior to the institution by either of legal or equitable proceedings of any kind, and as a condition precedent thereto, any dispute between the Contractor and the Owner related to the Contract, including a dispute over the Owner's decision regarding a Claim, shall be subject to mediation as follows:

.1 If the issue to be mediated involves only a dispute regarding the Contract Time, no request to mediate shall be made unless liquidated damages have been assessed by the Owner. If the issue to be mediated involves a Claim or other financial dispute, no request to mediate shall be made unless the amount is $50,000 or more or until there are cumulative Claims or disputes amounting to $50,000 or more; provided, however, that a mediation request can be made as to any Claim or financial matter at any time after Substantial Completion;

.2 The party seeking mediation shall notify the other party in writing of its mediation request. In such written request, the requesting party must clearly describe the issues it believes are subject to mediation;

.3 Within fifteen (15) days of receipt of the mediation request, the non-requesting party shall respond in writing to the request;

.4 Unless the Owner and the Contractor agree to other rules for mediation, mediation shall be in accordance with the Construction Industry Rules of Arbitration and Mediation Procedures in effect at the time of the mediation;

.5 The parties shall share the mediator’s fee and any filing fees equally; provided, however, that if a party makes a written request to the mediator without satisfying the requirements of this section and by doing so incurs any costs or fees, that party shall be solely responsible for the costs or fees;

.6 Unless otherwise mutually agreed to by the parties, the mediation shall be in Boise, Ada County, Idaho;

.7 The parties shall cooperate in arranging the other details of mediation, such as selection of the mediator, mediation dates and times;

.8 The parties agree that all parties necessary to resolve the matter shall be parties to the same mediation proceeding; provided, however, that no subcontractor or sub-subcontractor shall attend the mediation absent advance notice and consent from the Owner;

.9 Agreements reached in mediation shall be enforceable as settlement agreements in any court having proper jurisdiction; and

.10 Unless otherwise agreed in writing, the Contractor shall continue the Work and maintain the approved schedules during any mediation proceedings. If the Contractor continues to perform, the Owner shall continue to make payments in accordance with the Contract Documents.

30.4 If mediation fails to resolve the dispute, either party may file an action in the courts of Idaho in accordance with the venue provision contained in this Contract.

IN WITNESS WHEREOF, the parties have executed this Contract on the dates set forth below.

OWNER: College of Western Idaho

_____ _____

Tony Meatte Date
Vice President Finance & Administration

_____ _____

Craig Brown Date
Executive Vice President Operations

CONTRACTOR:

_____ _____

Print Name: Date
Title:

EXHIBIT A SUMMARY OF WORK

Utility & Infrastructure in Support of Modular Buildings

This utility and infrastructure project will facilitate the placement of three (3) modular buildings. Work for placement of these structures will include, but is not limited to, site work, concrete, underground utility connections for power, sewer, water and gas. Electrical transformers and associated equipment will be needed, and installation of paving, concrete sidewalks and landscaping will also be required. See Construction Plans and Specification approved by the State of Idaho Division of Building Safety on 2-19-2019.

EXHIBIT B PARTIES TO CONTRACT

ADDRESSES and AUTHORIZED REPRESENTATIVES: The names, addresses and authorized representative of the Owner, the Contractor and Owner are:

OWNER: The College of Western Idaho

6042 Birch Lane

Nampa, ID 83687

Aaron Whitman, Facilities Planning Manager: 208-562-2654

CONTRACTOR:

CONTRACTORS:

EXHIBIT C INTENTIONALLY LEFT OUT

EXHIBIT D CONTRACTOR'S AFIDAVIT CONCERNING TAXES

STATE OF _____)

COUNTRY OF _____)

Pursuant to Title 63, Chapter 15, Idaho Code, I, the undersigned, being duly sworn, depose and certify that all taxes, excises and license fees to the State or its taxing units, for which I or my property is liable then due or delinquent, has been paid, or arrangements have been made, before entering into a Contract for construction of any public works in the State of Idaho.

Name of Contractor

Address

City and State

By:

(Signature)

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

Commission expires:

NOTARY PUBLIC, residing at

EXHIBIT E SUBCONTRACTORS TO CONTRACT

ADDRESSES and AUTHORIZED REPRESENTATIVES: The names, addresses and authorized representative of the Subcontractor(s) are:

SUBCONTRACTOR(S):

EXHIBIT F NOTICE TO PROCEED

TO CONTRACTOR:

CONTRACT DATE: ARCHITECT:

CONTRACT AMOUNT:

DATE OF ISSUANCE: OWNER:

You are hereby notified to commence work on the above reference contract on/or before _____and are to substantially complete the work in accordance with requirements of the schedule; therefore your contract completion date is _____.

The contract provides for the sum of $500.00 as liquidated damages for each consecutive calendar day after the above established substantial completion date in which the work remains incomplete. Completion dates will be established by a "Certificate of Substantial Completion."

You are reminded that any changes to the original contract document regarding either cost or completion date must be effected by a change order approved by the Owner.

Your payment estimates must be submitted on forms acceptable to the Owner. We will be most happy to assist you in preparing the payment estimate forms.

A pre-construction meeting will be held at _____(location).

Sincerely,

_____

Signature

_____

Printed Name

_____

Title

EXHIBIT G IDAHO STATE TAX COMMISSION REQUEST FOR TAX RELEASE EF00234 (CONTRACTOR TO ATTACH)

A copy of this form can be downloaded from the Idaho State Tax Commission – Official Website located at https://tax.idaho.gov/

Contractor must complete this form and submit I to CWI pursuant to Section 7.13.5 of the Contract.

EXHIBIT H RELEASE OF CLAIMS

(TO BE COMPLETED FOR FINAL PAYMENT)

I, _____, do hereby release the College of Western Idaho from any and all claims of any character whatsoever arising under and by virtue of contract number _____ Dated _____ as amended, except as herein stated.

Dated _____

Contractor _____