

September 2015

Project Manual and Technical Specifications:

Onna Moniz-John Park and Central Avenue Playground

Surfacing Improvements Project

Map 205, Block 18, Parcel 29

Central Avenue, East Providence, RI

RFP # 14/15-38

Administered by:
The City of East Providence, RI



Designed by:



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LANDSCAPE ARCHITECTURE

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Surfacing Improvements Project

City of East Providence, RI

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LIST OF DRAWINGS

Project Title:

Onna Moniz-John Park and Central Avenue Playground
Surfacing Improvements Project

City of East Providence, RI

Contract Drawings:

Contract Drawings shall be those plans entitled, '*Onna Moniz-John Park/Central Avenue Playground Surfacing Improvements Project*', sheets 1-3 of 3, dated September 2015, as prepared by Kevin M. Alverson Landscape Architecture

List of Drawings:

<i>Drawing Number</i>	<i>Drawing Title</i>
Sheet 1 of 3	Existing Condition and Site Preparation Plan
Sheet 2 of 3	Site Layout and Grading Plan
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SUMMARY OF WORK

Section 01010

Part 1 - General:

1. 01 – Work Covered by Contract Documents:

- A. Base Bid: The work to be done under this Contract, 'Onna Moniz-John Park and Central Avenue Playground Surfacing Improvements Project,' consists of site preparation, surfacing improvements, resetting of existing and installation of new fence construction, as specified, and as shown on the Contract Drawings.
- B. Alternates: All Alternates to allow for adjustments to the Base Bid Prior to Contract Award are listed under Part 2 of the Bid form as provided by the City of East Providence and included within the Project Manual.
- C. Contract Adjustments: Contract Adjustments and procedures for said adjustments to Scope of Work during the Course of Construction are outlined in other sections of this Project Manual, including, but not necessarily limited to Section 01035 of these specifications.

1.02 – Schedule of Work:

- A. The Contractor is required to submit a detailed Schedule of Work outlining the anticipated tasks and specific project schedule for the successful completion of the project. This shall be submitted to the Owner's Representative after a Pre-construction conference to be scheduled between the Owner, the Owner's Representative, and the Contractor, and prior to the start of construction. The schedule shall be updated every two weeks during construction procedures.
- B. The Contractor is advised of the following when preparing the required Schedule of Work:
 - 1. The Contractor shall coordinate input from all Subcontractors and Suppliers in the preparation of this schedule.
 - 2. The Contractor's operations, scheduling, and site access shall be coordinated with the Owner.
 - 3. Work at night, on Sundays, or on major Holidays will be prohibited without explicit Owner's written permission except in the case of emergency. The Contractor shall provide, at his own expense, all lighting, traffic control, safety equipment, and other facilities necessary for the proper execution of the work.

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1.03 – Contract Drawings and Specifications:

- A. The Contract Drawings shall be those drawings entitled, 'Onna Moniz-John Park/Central Avenue Playground Surfacing Improvements Project,' as prepared by Kevin M. Alverson Landscape Architecture, dated September 2015, as amended.
- B. The Contract Drawings and Specifications are included in the Contract Documents, and intended to complement each other. All work called for by either shall be as binding as if called for by both.
- C. The Contractor shall thoroughly acquaint himself with the Project Site, Contract Agreement, and all requirements of the Specifications and Contract Drawings. For reference, these Specifications are separated into sections. All sections are complimentary and as such shall not operate to make the Owner's Representative an arbiter to establish jurisdictional limits.
- D. Additional Drawings, Memoranda, Illustrations, etc., prepared during the course of construction to clarify or interpret the Project Specifications, or modify the contract during construction shall be incorporated into the Contract Documents, and will be considered part of the Project Record.
- E. All Drawings, Specifications and Memoranda relative to the work are the property of the Owner and shall be returned to the Owner's Representative at the completion or cessation of the work.

1.04 – Obligations of the Contractor:

- A. The contractor shall furnish all labor, materials, plant, supplies, equipment, tools and all other facilities necessary to the proper and complete construction of the project, as required by the Contract Drawings and as specified herein.
- B. Throughout the duration of the Contract, wherever it is specified that work is to be done, or labor, materials or equipment are to be furnished, it is understood to mean that the said work to be done or the labor, materials or equipment to be furnished is to be supplied or done by the Contractor at his own proper cost or expense.
- C. Errors and/or Discrepancies:
 - 1. The Contractor shall verify all quantities and measurements as may be shown on the Contract Drawings or called for in the Specifications and shall notify the Owner's Representative of all discrepancies, errors or omissions found therein.

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Section 01010

2. The Contractor shall notify the Owner's Representative immediately of any apparent ambiguity, error or omission in the Contract Drawings or Specifications. The failure to correctly or specifically mention or note any portion of the work, the proper performance of which is evidently necessary to fulfill the general intention of the Contract Drawings and Specifications, shall not act to release the Contractor from the proper performance of such work in the identical manner as if fully and correctly indicated and without expense to the Owner beyond the stipulated Contract price or prices. The forgoing shall not apply to additions, improvements or changes for which provisions have been otherwise made.

D. Mutual Responsibility:

1. If the Contractors or Subcontractors suffer loss or damage to their work through acts of neglect on part of General Contractor, then General Contractor agrees to satisfactorily arrange for settlement with other such Contractor or Subcontractor, if other such Contractor or Subcontractor will so settle.
2. If, however, such other Contractor or Subcontractor chooses to assert claim against Owner, on account of damage alleged to have been sustained, Owner shall notify Contractor, who shall defend, at his expense, any suit based on such claims, and, if judgment or claims against Owner shall be allowed, Contractor shall pay or satisfy such judgment or claims, and pay costs and expenses in connection with same.

E. Legal Address of the Contractor:

1. The address given in the Bid or Proposal submitted by the Contractor and the Contractor's office are hereby designated as places to either of which notices, letters and other communications to the Contractor shall be certified, mailed or delivered. The delivering at the above-named place, or depositing in a postpaid package directed to the first-named place, in any post office box regularly maintained by the Post Office Department, or any notice, letter or other communication to the Contractor, shall be deemed sufficient service thereof upon the Contractor and the date of said service shall be the date of such delivery or mailing. The first-named address may be changed at any time by an instrument in writing, executed and acknowledged by the Contractor and delivered to the Owner's Representative. Nothing herein contained shall be deemed to preclude or render inoperative the service of any notice, letter or other communication upon the Contractor personally.

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F. Employees of the Contractor:

1. The Contractor shall employ a competent, experienced Superintendent and Forman to represent him at the several parts of the work. These persons shall be present at all times while the work entrusted to them is in progress and shall be fully informed regarding it. The Superintendent shall be satisfactory to the Owner's Representative and shall represent and have full authority to act for the Contractor in his absence. All other persons employed on the work shall be competent and skillful persons.

G. Safety Precaution Measures (Generally):

1. The Contractor shall take all necessary precautions to conduct his operations in such a manner so as to provide maximum possible safety for all employees on the work and the public as well. The Contractor shall provide suitable barricades, bridges, railings and similar protection around and over excavations and open trenches so as to insure maximum protection. All State and Federal Laws applicable to the work shall receive compliance.
2. The Contractor shall designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's Superintendent unless otherwise designated in writing by the Contractor to the Owner and the Owner's Representative.

H. Permits and Licenses:

1. The Contractor shall secure and pay for all local town, State, & Federal permits and licenses necessary for the execution of the work.
2. The Contractor shall give such notices, comply with all laws, ordinances, rules or regulations having bearing on the conduct of the work. The Contractor shall indemnify the Owner, its officers and agents against claim or liability arising from failure to comply with such rules, laws or ordinances by himself, his employees or Subcontractors. Fees shall be waived for Municipal permits only.

1.05 – Obligations of the Owner:

- A. The Owner will provide all land and easements necessary for the construction of all permanent structures called for by the Contract. The limits of the land acquired for the permanent construction are shown on the Contract Drawings.

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1.06 – Obligations of the Owner’s Representative:

- A. The Owner’s Representative shall be the interpreter of the requirements of the Contract Documents and the judge of the performance there under by both the Owner and Contractor. The Owner’s Representative shall render interpretations necessary for the proper execution or progress of the work with reasonable promptness on written request of either the Owner or the Contractor, and shall render written decisions, within a reasonable time, on all claims, disputes and other matters in question between the Owner and the Contractor relating to the execution or progress of the work or the interpretation of the Contract Documents.
- B. Interpretations and decisions of the Owner’s Representative shall be consistent with the intent of and reasonably inferable from the Contract Documents and shall be in written or graphic form. In the capacity of interpreter and judge, the Owner’s Representative shall endeavor to secure faithful performance by both the Owner and the Contractor, shall not show partiality to either, and shall not be liable for the result of any interpretation or decision rendered in good faith in such capacity.
- C. The Owner’s Representative shall have authority to reject work that does not conform to the Contract Documents. Whenever, in the Owner’s Representative's reasonable opinion, it is necessary or advisable for the implementation of the intent of the Contract Documents, the Owner’s Representative will have authority to require special inspection or testing of the work in accordance with the provisions of the Contract Documents, whether or not such work be fabricated, installed or completed.
- D. The Owner’s Representative will not control over, take charge of or, be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the work, since these are solely the Contractor's responsibility.

1.07 – Site Control and General Protection Measures:

- A. The Contractor shall, at his own expense, protect all work completed or partially completed under this Contract and shall be solely responsible for the care and protection of all materials covered by this Contract. Damage, loss, or injury from any cause whatsoever shall be made good by the Contractor at his own expense. The method of providing against such damage, loss or injury is left to the discretion of the Contractor. All damaged work must be replaced to the satisfaction of the Owner’s Representative at no cost to the Owner.
- B. Utility Protection and "DIG-SAFE' DAMAGE PREVENTION SYSTEM: All Contractors or Subcontractors performing drilling, boring, auguring, jetting, sheeting or pile

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installation, soil preloading for consolidation, demolition, excavation or like work shall, prior to commencement of these activities, shall verify utility locations by contacting DIG SAFE (888-DIG-SAFE (344-7233) or dial 811), in accordance with the laws of the State of RI.

1. Contractor shall be responsible for injury to water pipes, gas pipes, oil pipes, electrical wires, conduits, drains, sewers, fiber optic cables and other structures that may be met within the project area, owned by individuals, by firms or corporations, or by the municipality. Contractor shall be liable for damages to public or private property resulting there from.
2. Shore or sling up in their places, without injury, gas pipes, water pipes, oil pipes, gasoline pipes, electrical conduits and other structures, public service owned, or controlled by individuals, firms or corporations, which may be intercepted during and by work under this Contract. Maintain them in constant operation except as may be required to connect and disconnect from them.

1.08 – Weather Conditions:

- A. No work shall be done when in the opinion of the Owner's Representative the weather is unsuitable. In no instance shall concrete, earth backfill, paving or embankment be placed upon frozen material. The Contractor shall be responsible for the protection of all completed or partially completed work as a result of extreme weather conditions. The Contractor shall be fully aware of the extremes of weather conditions in the area in regards to the depth of frost and snowfall, and the degree and length of sub-freezing temperatures during the winter season. If there is delay or interruption in the work due to weather conditions, the necessary measures must be taken to bond new work to old. Only such work as will not suffer injury to workmanship or materials will be permitted in inclement weather.
- B. Should tornado, hurricane, gale or heavy wind warnings be issued, the Contractor shall take every practicable precaution to minimize the danger to persons, to the work, and to adjacent properties. Such damage caused to any part of the work shall be rectified or replaced to the complete satisfaction of the Owner's Representative and at no expense to the Owner. Injury to personnel or damage to adjacent property because of the work shall be the complete responsibility of the Contractor, and he accepts exclusive liability for same.

1.09 – Loading:

- A. No part of any work involved in this Contract shall be loaded during construction with a load greater than it is calculated to carry with safety. Should any accidents or

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damage occur through any violation of this requirement, the Contractor shall be held responsible under his Contract and Bond.

1.10 – Partial Occupancy:

- A. The Owner shall have the right to take possession of or use any part of the completed or partially completed work prior to final acceptance.
- B. Should Partial Occupancy be desired by Owner, the Owner will give notice thereof to Contractor, and such occupancy shall be upon the following terms:
 - 1. The occupancy or use of any area shall not constitute acceptance of work not performed in accordance with the Contractor, nor relieve Contractor of liability to perform any work required by Contract but not completed at time of said occupancy.
 - 2. The general guarantee period, called for in General Conditions, for work substantially completed shall not begin to run until issuance of certificate by Owner's Representative.
 - 3. Contractor shall be relieved of all maintenance costs on portions occupied under this Agreement.
 - 4. Contractor shall not be responsible for wear and tear or damage resulting from Partial Occupancy as agreed to by Owner and Contractor.
 - 5. Owner shall assume risk of loss with respect to any portion occupied by it under the terms of this Agreement. However, Contractor shall assume full responsibility for loss or damage traceable to his fault or negligence in the performance of his Contract.

1.11 – Materials and Workmanship:

- A. All work shall be done in a neat, workmanlike manner. All materials, equipment and workmanship shall fully conform to the requirements of the Contract Documents and shall be in every respect in accordance with the best modern practice. All materials and equipment shall be new and of standard first-grade quality and design. Materials and equipment shall be assembled and erected in a neat, workmanlike manner and in proper level and alignment.

1.12 – Other Requirements:

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- A. Grades, Lines and Layout:
1. Contractor shall determine the finish grades and lines in the field as provided by the elevations of the existing grades and surfaces specified to remain.
 2. Deviation from established grades or lines determined by the elevations of the existing grades and surface, etc., specified to remain, will not be permitted except by written approval of Owner's Representative, or unless obvious error exists in designated grades or lines.
- B. Test Pits:
1. The Contractor shall not proceed with the work at locations where new stormwater facilities or utilities are to be constructed or connect to existing until a test pit has been dug to determine the existing conditions.
 2. If existing conditions differ from those shown on the Drawings, such as debris, unsuitable materials, inverts, size, etc., the Contractor shall notify the Owner's Representative so that the revisions can be made to suit conditions found. If differing conditions are found, no test pits are to be backfilled until the Owner's Representative has reviewed to his satisfaction.
 3. Compensation for test pits shall be considered as having been included in the prices stipulated for the appropriate items of utility work as listed in the Bid. Test pits shall be backfilled immediately after their purpose has been satisfied and the surface restored and maintained in a manner satisfactory to the Owner's Representative.
- C. Disposal of Excess and Unsuitable Non-Hazardous Material: The Contractor shall be responsible for the disposal of all excess and unsuitable non-hazardous material. The Owner's Representative may direct the Contractor to dispose material at a site selected by the Owner at no additional cost to the Owner.
- D. Water: The Contractor shall not operate any valves nor tie-into the water service unless approval has been received from the Owner.
- E. Electric: The Contractor shall not tie-into the electric service unless approval has been received from the Owner and appropriate Utility Company(ies).
- F. Environmental Regulations: The Contractor shall conform operations to all applicable environmental regulations.

End of Section

MODIFICATION PROCEDURES

Section 01035

Part 1 – General:

1.01 – Related Documents:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1 Section 01010 "Summary of Work" for requirements for the Contractor's Construction Schedule.
 - 2. Division 1 Section 01631 "Substitutions" for administrative procedures for handling requests for substitutions made after award of the Contract.

1.02 – Minor Changes in the Work:

- A. Minor changes in the Work, not involving adjustment to the Contract Sum or Contract Time/Schedule may be requested by the Owner or Owner's Representative. Should such minor changes be requested, Owner's Representative will issue supplemental instructions authorizing this work.

1.03 – Change Order Proposal Requests:

- A. Owner-Initiated Proposal Requests: The Owner's Representative will issue a detailed description of proposed changes in the Work that will require adjustment to the Contract Sum or Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
 - 1. Proposal requests issued by the Owner's Representative are for information only. Do not consider them as an instruction either to stop work in progress or to execute the proposed change.
 - 2. Within 1 day of receipt of a proposal request, submit an estimate of cost necessary to execute the change to the Owner's Representative for the Owner's review.
 - 3. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.

MODIFICATION PROCEDURES

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4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 5. Include a statement indicating the effect the proposed change in the Work will have on the Contract Time.
- B. Contractor-Initiated Proposals: When latent or unforeseen conditions require modifications to the Contract, the Contractor may propose changes by submitting a request for a change to the Owner's Representative.
1. Include a statement outlining the reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and Contract Time.
 2. Include a list of quantities of products required and unit costs, with the total amount of purchases to be made. Where requested, furnish survey data to substantiate quantities.
 3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 4. Comply with requirements in Section 01631 "Substitutions" if the proposed change requires substitution of one product or system for a product or system specified.
- C. Change Order/Proposal Request Form: All Change Order Documentation shall be provided by contractor on appropriate standardized AIA forms.

1.04 – Construction Change Directive:

- A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of a Proposal Request, the Owner's Representative, upon request by the Owner, may issue a Construction Change Directive on appropriate AIA Form. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
1. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine change in the Contract Sum or Contract Time.

MODIFICATION PROCEDURES

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- B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.
 - 1. After completion of the change, submit an itemized account and supporting data necessary to substantiate cost and times adjustments to the Contract.

1.05 – Change Order Procedures:

- A. Upon the Owner's approval of a Proposal Request, the Contractor will issue a Change Order for signatures of the Owner and the Owner's Representative. Use appropriate AIA standardized documents for Change Order Proposals.

Part 2 - Products (Not Applicable)

Part 3 - Execution (Not Applicable)

End of Section

Part 1 – General:

1.01 – Related Documents:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 01010 “Summary of Work”
 - 2. Section 01340 "Shop Drawings, Product Data, and Samples"
 - 3. Section 01700 "Contract Closeout”
 - 4. Section 01720 “Project Record Documents”
 - 5. Structural drawings and Shop Drawings Provided by Contractor

1.02 – Summary:

- A. The Contractor shall acquire and bear the cost of the services of a licensed Land Surveyor to establish the Benchmarks and position of the proposed new site features. Refer to the Construction Documents for further information.
- B. General: This Section specifies administrative and procedural requirements for field-engineering services, when required throughout the construction of this project, including, but not limited to Layout Engineering Services, and As-Built Drawing Preparation.

1.03 – Submittals:

- A. Certificates: If requested, submit a certificate signed by the land surveyor or professional engineer certifying the location and elevation of improvements.
- B. Project Record Documents: Submit a record of Work performed and record survey data as required under provisions of section 01700 "Project Closeout" and Section 01720 “Project Record Documents” Section.

1.04 – Quality Assurance:

- A. Survey Qualifications: Surveyor Engaged by the Contractor shall be a surveyor licensed in Rhode Island, with active Certificate of Authorization from the State to perform required engineering services. Upon request, Contractor shall supply the Owner with all documentation of licensing and/or qualifications.

Part 2 – Products (Not Applicable)

Part 3 – Execution

3.01 – Examination:

- A. Identification: The Surveyor will locate and identify existing control points on the project site. Refer to Contract Drawings for original control points and establish additional or temporary controls as necessary. Coordinate with authorities as necessary for traffic control and/or access to areas outside of the identified Limit of Disturbance as noted on plans.
- B. Contractor to make themselves aware of existing field conditions and project site and verify layout information shown on the Drawings, in relation to those conditions, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.
 - 1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.
 - 2. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.
- C. Establish and maintain a minimum of 2 permanent benchmarks on the site, referenced to data established by survey control points.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
- D. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction – refer to Section 01010 of these Specifications for DIG-SAFE Utility Verifications.

FIELD ENGINEERING

Section 01050

1. Prior to construction, the Contractor shall verify the location of sanitary sewer, storm sewer, water-service piping, electric conduit and /or all other under ground components, so as to not impose damage to any existing under ground utilities and/or structures.

3.02 – Performance:

- A. Work from lines and levels established by the existing conditions survey. Establish benchmarks and markers to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.
 1. Advise entities engaged in construction activities of marked lines and levels provided for their use.
 2. As construction proceeds, check every major element for line, level, and plumb.
- B. Surveyor's Log: Maintain a surveyor's log of control and other survey work. Upon request, this log shall be available for reference to the Owner, Owner's Representative, and any local, State, or Federal Regulatory Staff.
 1. Record deviations from required lines and levels, and advise the Project Manager and Owner's Representative when deviations that exceed indicated or recognized tolerances are detected. On Project Record Drawings, record deviations that are accepted and not corrected.
- C. Existing Utilities: Furnish information necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with local authorities having jurisdiction.

End of Section

Part 1 - General:

1.01 – General Permitting:

- A. The Contractor shall abide by all local, state, and federal regulations and regulatory authorities for all aspects of this project, including, but not necessarily limited to local building code, Rhode Island Department of Environmental Management (RIDEM) regulations, Local Utility Commissions, RI Governor’s Commission on Disabilities, The Americans with Disabilities Act, and Conservation and Preservation Authorities.

- B. Because this project is funded with federal funds, additional requirements apply such as, but not limited to, the following: Section 3 hiring goals and reporting, Equal Opportunity, WBE & MBE goals, Section 504 regulations regarding accessibility requirements, Davis-Bacon Act, as amended (40 U.S.C. 3141–3148), Contract Work Hours and Safety Standards Act (40 U.S.C. 3701–3708), Rights to Inventions Made Under a Contract or Agreement, Clean Air Act (42 U.S.C. 7401–7671q.), the Federal Water Pollution Control Act (33 U.S.C. 1251–1387), as amended, Energy Policy and Conservation Act (42 U.S.C. 6201), Byrd Anti-Lobbying Amendment (31 U.S.C. 1352), Environmental Compliance (24 CFR 85.36(i)(12)). These requirements will be made a part of any contract entered into for this Project.

1.02 – Related Documents:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

Part 2 – Products (Not Applicable)

Part 3 – Execution (Not Applicable)

End of Section

REFERENCE STANDARDS AND DEFINITIONS

Section 01095

Part 1 – General:

1.01 – Related Documents:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 – Definitions:

- A. General: Defined below are Terms utilized throughout these project specifications and Contract Documents. Additionally, basic contract definitions may be included in the Conditions of the Contract between Owner and Contractor.
- B. Definitions:
 1. Approved: The term "approved," when used in conjunction with the Owner's Representative's action on the Contractor's submittals, applications, and requests, is limited to the Owner's Representative's duties and responsibilities as stated in the Conditions of the Contract.
 2. Directed: Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Owner's Representative, requested by the Owner's Representative, and similar phrases.
 3. Experienced: The term "Experienced", or "Experience" when used with the term "installer," means having a minimum of 5 previous projects similar in size and scope to this Project, being familiar with the special requirements indicated, and having complied with requirements of authorities having jurisdiction.
 4. Furnish: The term "furnish" means supply and deliver to the Project Site, ready for unloading, unpacking, assembly, installation, and similar operations.
 5. Indicated: The term "indicated" refers to graphic representations, notes, or schedules on the Drawings, or other paragraphs or Schedules in the Specifications, and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the reader locate the reference. Location is not limited.
 6. Install: The term "install" describes operations at the Project Site including the actual unloading, unpacking, assembly, erecting, placing, anchoring, applying,

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working to dimension, finishing, curing, protecting, cleaning, and similar operations.

7. Installer: The term "installer" refers to the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.
 8. Project Site: The term "Project Site" is the space available to the Contractor for performing construction activities, either exclusively or in conjunction, with others performing other work as part of the Project. The extent of the Project Site is shown on the Drawings and may or may not be identical with the description of the land on which the Project is to be built.
 9. Provide: The term "provide" means to furnish and install, complete and ready for the intended use.
 10. Regulations: The terms "regulations", "regulators", and "regulatory", include laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.
 11. Testing Agencies: The terms "testing agency" or "testing agencies", refer to an independent entity engaged to perform specific inspections or tests, either at the Project Site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.
- C. Trades: Using terms such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.
- D. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.
1. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to

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interfere with local trade-union jurisdictional settlements and similar conventions.

1.03 – Specification Format and Content Explanation:

- A. Specification Format: These Specifications are organized, generally, into Sections and Divisions based on CSI's 16-Division format. Where variations exist between the format of these specifications and those of the Standard CSI Format, the organization of these Contract Documents shall take precedence. In all Project Records, Contractor shall refer to any specifications by the codifications utilized in these specifications.

- B. Specification Content: This Specification uses certain conventions regarding the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations or circumstances. These conventions are explained as follows:
 - 1. Abbreviated Language: Language used in Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be interpolated as the sense requires. Singular words will be interpreted as plural and plural words interpreted as singular where applicable as the context of the Contract Documents indicates.

 - 2. Streamlined Language: These Specifications generally use the imperative mood and streamlined language. Requirements expressed in the imperative mood are to be performed by the Contractor. At certain locations in the Text, subjective language is used for clarity to describe responsibilities that must be fulfilled indirectly by the Contractor or by others when so noted.

 - 3. The words "shall be" are implied where a colon (:) is used within a sentence or phrase.

1.04 – Industry Standards:

- A. Applicability of Standards: Except where the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

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

REFERENCE STANDARDS AND DEFINITIONS

Section 01095

AISI	American Iron and Steel Institute 1101 17th St., NW Washington, DC 20036-4700	(202) 452-7100
ANSI	American National Standards Institute 11 West 42nd St., 13th Floor New York, NY 10036	(212) 642-4900
ASTM	American Society for Testing and Materials 1916 Race St. Philadelphia, PA 19103-1187	(215) 299-5400
FM	Factory Mutual Systems 1151 Boston-Providence Turnpike P.O. Box 9102 Norwood, MA 02062	(617) 762-4300
NEC	National Electrical Code (from NFPA)	
NECA	National Electrical Contractors Assoc. 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814	(301) 657-3110
NFPA	National Fire Protection Assoc. One Batterymarch Park P.O. Box 9101 Quincy, MA 02269-9101	(617) 770-3000
UL	Underwriters Laboratories 333 Pfingsten Rd. Northbrook, IL 60062	(708) 272-8800

2. Federal Government Agencies: Names and titles of federal government standards, or Specification producing agencies are often abbreviated. The following acronyms or abbreviations referenced in the Contract Documents indicate names of standards or Specification producing agencies of the federal government. Names and addresses are subject to change and are believed, but are not assured, to be accurate and up-to-date as of the date of the Contract Documents.

REFERENCE STANDARDS AND DEFINITIONS

Section 01095

OSHA Occupational Safety and Health Administration
(U.S. Department of Labor)
200 Constitution Ave., NW
Washington, DC 20210

(202) 219-6091

1.05 – Submittals:

- A. Permits, Licenses, and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established in conjunction with compliance with standards and regulations bearing upon performance of the Work.

Part 2 - Products (Not Applicable)

Part 3 - Execution (Not Applicable)

End of Section

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Section 01340

Part 1 – General:

1.01 – Requirements Included:

- A. Submit Shop Drawings, Product Data and Samples required by the Contract Documents.
- B. Shop Drawings:
 - 1. Drawings shall be presented in a clear and thorough manner.
 - 2. Shop Drawings and Details shall be identified by reference to sheet and detail shown on Contract Drawings, or Contract Specification Section and Subsection.
 - 3. Minimum Sheet Size: 8-1/2 inch by 11 inch.
- C. Product Data:
 - 1. Preparation:
 - a. Clearly mark each copy to identify pertinent products or models.
 - b. Product Data shall be identified by reference to sheet and detail shown on Contract Drawings, or Contract Specification Section and Subsection.
 - c. Show performance characteristics, capacities and efficiencies, as well as showing dimensions and clearances required.
 - d. Where applicable, show utility, wiring, or piping, etc., diagrams and controls as may be appropriate.
 - 2. Manufacturer's Standard Schematic Drawings and Diagrams:
 - a. Modify Drawings and Diagrams to delete information that is not applicable to the work.
 - b. Supplement standard information to provide information specifically applicable to the work.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Section 01340

D. Samples:

1. Office samples: Samples shall be of sufficient size and quantity to clearly illustrate:
 - a. Functional characteristics of the product, with integrally related parts and attachment devices.
 - b. Full range of color, texture and pattern.
2. Field Samples and Mark-ups: Contractor shall erect, at the project site, at a location acceptable to the Owner's Representative.
3. Size or Area: That specified in the respective Specification Section.
4. Fabricate each sample and mark-up complete and finished.
5. Remove mark-ups at conclusion of work or when acceptable to the Owner's Representative.

1.02 – Contractor Responsibilities:

- A. Review Shop Drawings, Product Data and Samples prior to submission.
- B. Determine and Verify:
 1. Field measurements.
 2. Field construction criteria.
 3. Catalog numbers and similar data.
 4. Conformance with Specifications.
- C. Coordinate each submittal with requirements of the work and of the Contract Documents.
- D. Notify the Owner's Representative in writing, at time of submission, of any deviations in the submittals from requirements of the Contract Documents, stating the difference in value between the Contract Requirements and those illustrated on the Shop Drawings submitted for review.
- E. No fabrication or work which requires submittals shall begin until submittals are reviewed and approved by Owner's Representative.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Section 01340

1.03 – Owner’s Representative Duties:

- A. The Owner’s Representative will check and review Shop Drawings, Product Data, and Submittals only for conformance with the Design Concept and for compliance with information given in the Contract Documents. Review by the Owner’s Representative of submittals is only for general conformance with the design concept of the project and general compliance with the information in the Contract Documents. Any approval or denial of submittals is subject to the requirements of the plans and specifications. Contractor is responsible for dimensions which shall be fabricated and correlated at the job site, fabrication processes and techniques of construction, coordination of his work with that of all other trades, and the satisfactory performance of his work to fulfill the requirements and intent of the Contract Documents. Such review will not relieve the Contractor from responsibility for errors of any sort in the Shop Drawings, nor for the proper coordination of any such submittal with all other work.

- B. Following review, the Owner’s Representative will affix a stamp and initials or signature indicating determinations made for each submittal in accordance with the following classifications:
 - 1. "Approved", indicates that the Submittal is Approved by the Owner’s Representative noting no exception to the intent of the Contract Documents. Fabrication or ordering of item may commence.

 - 2. "Approved with Changes Noted", indicates that the Submittal is Approved by the Owner’s Representative with minor corrections or additions noting no exception to the intent of the Contract Documents. No further review of submittal is required and item may be fabricated or ordered on basis of and following the corrections noted.

 - 3. "Revise and Resubmit" indicates that no fabrication may be commenced, and that the Contractor must resubmit the Submittal to the Owner’s Representative only after appropriate revisions are made to meet the intent of the Contract Documents.

 - 4. "Rejected" indicates the Submittal’s non-conformance with the Contract Requirements, or that too many corrections would be necessary to meet the intent of the Contract Documents. The Owner’s Representative will state the reasons for rejection.

- C. Following Review and Determinations made, Stamped Submittals are to be returned to the Contractor for their file, distribution, and/or for resubmission.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

Section 01340

1.04 – Contractor’s Submission Requirements:

- A. Make submittals promptly in accordance with reviewed schedule, and in such sequence as to cause no delay in the work or in the work of any other Contractor.
- B. No submittals will be accepted by the Owner’s Representative if transmitted via FAX Machine.
- C. Scheduling of Submittals: Scheduling of Submittals shall be the responsibility of the Contractor, and shall be so submitted in proper sequence, in order of appropriate lead-time of fabrication and priority of construction procedures, following a logical schedule of construction procedures. Such scheduling shall allow reasonable time for review, revisions, resubmission, and rechecking where required, until material submitted is acceptable to Owner’s Representative. To allow the Owner’s Representative adequate time for checking and processing, contractor shall provide three (3) weeks from the date of receipt of Submittals by the Owner’s Representative, to the mailing date of the Submittals returned to the Contractor by the Owner’s Representative. Such submittal schedule dates shall recognize the possibility of rejections and/or required resubmission. Such schedules shall be subject to change from time to time, as required, by mutual agreement of the Owner’s Representative and the Contractor.
- D. No work shall commence in the shop or on the job nor shall material be delivered to the site until pertinent Shop Drawings have been reviewed and approved by the Owner’s Representative.
- E. Product Specific Items, Equipment, or Materials: Specific manufacturers' names and catalog numbers are used herein to establish quality and design of a particular item. Where items, equipment, or materials in the Plans and Specifications reference a particular brand, manufacturer, or trade name, it is understood that a reviewed and approved equal product may be substituted by the Bidder or Contractor only following approval by the Owner’s Representative.
- F. If the Contractor proposes to use a material which deviates in any way from the detailed requirements of the Contract Documents, he shall inform the Owner’s Representative in writing of the nature of such deviations at the time the material is submitted for review. Contractor shall request a review of the deviation from the requirements of the Contract Documents. Proposed Deviated Material must be suitable for the intended use, and Contractor must provide evidence of this when the request is made, and prior to review by Owner’s Representative
 - 1. Evidence provided by Contractor shall lead to a reasonable certainty that the proposed substitution or deviation will provide a result at least equal in quality

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

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to that specified. If, in the opinion of the Owner's Representative, the evidence presented by the Contractor does not provide a sufficient basis for such reasonable certainty, the Owner's Representative will reject such substitution or deviation without further investigation. The Contractor must then resubmit with a material which meets the Project Specifications.

- G. A Contractor or Subcontractor who carries the cost of a substituted product in his Bid with no prior review by the Owner's Representative, does so at his own risk. The Owner's Representative is in no way obligated to review nor allow a substitution to be furnished. The Contractor shall submit all requests for substitutions sufficiently ahead of need to cause no delay in the job because of the subsequent rejections and/or resubmissions.
- H. Any additional cost, or any loss or damage arising from the substitution of any material or any method for those originally specified shall be borne by the Contractor, notwithstanding review or acceptance of such substitution by the Owner or the Owner's Representative, unless such substitution was made at the written initiation of the Owner. Any additional cost for redesign of any components for a substituted product shall be borne by the Contractor unless such substitution was initiated in writing by the Owner.
- I. Only Shop Drawings or Submittals received from the General Contractor will be considered for review by the Owner's Representative. All Shop Drawings or Submittals prepared by Subcontractors shall be processed through the General Contractor in the same manner as stipulated in the paragraphs above. The General Contractor shall check all Shop Drawings and Submittals for conformity with the Contract Documents and particularly for field measurement and proper fit with adjoining work prior to submitting same to the Owner's Representative for review. Certification shall appear on each Shop Drawing or Submittal stating that the General Contractor has made this check. Terms such as "by others" or "not by (this supplier or Subcontractor)" shall not be used on Shop Drawings or Submittals; the Contractor shall state by whom related items are to be furnished, supplied, and/or installed. The Owner's Representative reserves the right to reject and return to the Contractor, without examination, any Shop Drawings or Submittals which have not been previously checked and certified by the General Contractor, or which in any way obviously are not in conformity with Contract Requirements.

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

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J. Shop Drawings:

1. Shop Drawings shall show the design, dimensions, connections, and other details necessary to insure that they accurately interpret the contract Documents and shall show adjoining work in such detail as required to provide proper connection with same. Where adjoining work also requires Shop Drawings, they shall be submitted for review at the same time to ensure that connections can be accurately checked.
2. Submit two (2) legible blackline prints of each Shop Drawing with sufficient blank space (minimum 4 inches by 2 inches) for the Owner's Representative's annotations and review stamp, except as otherwise called for herein. The Shop Drawing(s) shall be delivered to the Owner's Representative in flat or roll form. The Owner's Representative will make annotations directly on the blackline, stamp same with appropriate review, and return original to the Contractor.
3. Shop Drawings marked "Approved" or " Approved with Changes Noted" shall be used by the General Contractor to obtain and distribute the prints necessary for fabrication and construction. They shall then be copied and returned to vendor or Subcontractor from whom they were originally received.
4. Shop Drawings marked "Revise and Resubmit" or "Rejected" shall be used by the General Contractor to make a record print and then copied and returned to vendor or Subcontractor who made the submittal for corrections required. Submittals marked "Rejected" or "Revise and Resubmit" shall not be sent to job site or used for shop fabrication.
5. This procedure shall be repeated until all corrections are made to the satisfaction of the Owner's Representative. The reviewed Shop Drawing(s) will be returned to the Contractor who in turn will be responsible for making prints in sufficient numbers for his own and his Subcontractors' use.

K. Product Data:

1. Submit two (2) legible copies with sufficient blank space (minimum 4 inches by 2 inches) for the Owner's Representative's annotations and review stamp, except as otherwise called for herein.
2. Data sheets shall show illustrated cuts of item to be furnished, scale details, dimensions, capacity, performance, characteristics, efficiencies, wiring diagrams, controls, and other pertinent information, as applicable. If more than one type of size is shown on these sheets, the item being submitted shall be clearly denoted.

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3. Product Data Submittals marked "Approved" or " Approved with Changes Noted" shall be used by the General Contractor to obtain and distribute the prints necessary for fabrication and construction. They shall then be copied and returned to vendor or Subcontractor from whom they were originally received.
4. Product Data Submittals marked "Revise and Resubmit" or "Rejected" shall be used by the General Contractor to make a record print and then copied and returned to vendor or Subcontractor who made the submittal for corrections required. Submittals marked "Rejected" or "Revise and Resubmit" shall not be sent to job site or used for shop fabrication.
5. This procedure shall be repeated until all corrections are made to the satisfaction of the Owner's Representative. The reviewed Product Data Submittal(s) will be returned to the Contractor who in turn will be responsible for making prints in sufficient numbers for his own and his Subcontractors' use.

L. Samples:

1. Each Sample submitted by the Contractor shall clearly note the appropriate Specification Section, as noted in these specifications.
2. Samples and related certificates shall be delivered to location designated by Owner's Representative. Samples requiring testing should be submitted to testing laboratory with adequate time to provide approximately twenty (20) days following completion of testing, and from date of receipt of results by Owner's Representative to date of completion of review by Owner's Representative.
3. Each sample shall be labeled to indicate material, trade name, place or origin, name of producer, name of Contractor, name of project, and Specification section correlated to these specifications. Samples must be packaged and delivered in such a manner as to reach destination in good condition. Letter of transmittal shall accompany samples and shall include certificate as to compliance with Contract Requirements.
4. No materials submitted for review and/or testing shall be delivered to Project Site until reviewed and approved by Owner's Representative.
5. Review of samples shall be deemed to be general only, and shall not constitute waiver of Owner's rights to demand full compliance with Contract Requirements. After actual delivery of material to site, Owner's Representative will make such inspection and testing as deemed necessary, and may reject such materials,

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equipment and accessories for cause, even though such items may have been given general review.

6. When a sample has been designated "Approved" or " Approved with Changes Noted", no change in brand or make may be made unless manufacturer fails to make satisfactory delivery or the delivered material fails to conform with Contract Requirements.
7. If materials, equipment or accessories which fail testing have been incorporated in work, Owner shall have the right to demand their removal and replacement by proper materials, or to demand and secure such reparation by Contractor as is equitable at the Contractor's expense.
8. Samples designated as "Rejected" or "Revise and Resubmit" will be returned to Contractor upon request, and at his expense, within thirty (30) days after rejection.

M. Submittals, Unless Otherwise Noted, Shall Contain:

1. The date of submission and the dates of any previous submissions.
2. The project title and number.
3. Contract identification and/or Correlating Specification Section(s).
4. The names of: Contractor, Supplier, and Manufacturer
5. Field dimensions, clearly identified as such.
6. Relation to adjacent or critical features of the work or materials.
7. Applicable standards, such as ASTM or Federal Specification Numbers.
8. Identification of deviations from Contract Documents.
9. Identification of revisions on resubmittals.
10. An 4" x 2" blank space for Owner's Representative stamps.
11. Contractor's stamp, initialed or signed, certifying their review of submittal, and other pertinent information such as verification of products, field measurements and field construction criteria, and coordination of the information within the submittal with requirements of the work and of Contract Documents.

1.05 – Resubmission Requirements:

- A. Make any corrections or changes in the submittals required by the Owner's Representative and resubmit until they are denoted "Approved" or "Approved with Changes Noted" by the Owner's Representative.
- B. Resubmitted Submittals:

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1. Contractor shall revise initial drawings or data and resubmit as specified by the Owner's Representative on the returned initial submittal.
2. Contractor shall indicate any changes which have been made other than those requested by the Owner's Representative.

C. Resubmitted Samples:

1. Contractor shall submit new samples as required by Owner's Representative on the returned initial submittal.

1.06 – Distribution:

- A. Contractor shall Distribute reproductions of Shop Drawings and copies of product data which carry the Owner's Representative stamp denoting "Approved" or "Approved with Changes Noted" to:
1. Job Site File.
 2. Record Documents File.
 3. Other Affected Contractors.
 4. Subcontractors.
 5. Supplier or Fabricator.
 6. As directed by the Owner's Representative

1.07 – Operation, Instruction, and Maintenance Manual:

- A. Two (2) bound copies of the Operation, Instruction, and Maintenance Manual shall be submitted to Owner's Representative for approval prior to beginning of Contract Closeout Procedures (See Section 01700 of this Project Manual). If the Manual is satisfactory, submit five (5) copies of the final manual as directed by Owner's Representative. If the Manual is not satisfactory, one (1) copy will be returned to the Contractor. When unsatisfactory Manuals are resubmitted, two (2) copies will again be required. Upon final acceptance by the Owner's Representative, submit five (5) bound copies of the final manual as directed by Owner's Representative.
- B. All elements and components of the equipment installed or furnished as part of the project shall be included in the Manual including a description of how the equipment or complete system works. Additionally, where a number of components are furnished to provide a complete system, the operation of the components as they relate to the complete system shall be described.
- C. The Manual shall include all necessary instruction for the maintenance and operation of the equipment installed or furnished as part of the project in accordance with the

SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

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manufacturer's recommendations. The Manuals shall include, but not limited to the following:

1. Index or Table of Contents.
 2. A complete written description of the operation of the equipment.
 3. Clear and concise maintenance instruction including schedules and types of finishes.
 4. Detailed drawings.
 5. Plumbing and/or wiring diagrams and control schematics including connection diagrams, as appropriate.
 6. Complete parts lists including the specific part or identification number utilized by the manufacturer of the parts.
 7. Recommended spare parts list.
 8. Current parts price list.
 9. All calibrations and other data for future modifications, alterations or reconfigurations shall be completely indicated and described.
 10. Pages are to be numbered consecutively through all sections of the Manual.
 11. Shop Drawing submittal data.
- D. Only data pertaining to the specific equipment installed or furnished as part of the project shall be included.
- E. The Manual(s) shall be bound in a heavy gauge three (3) ring vinyl binder with a minimum of two (2) interior vinyl pockets, or similar binding approved by the Owner. The color of the manual front and back cover will be chosen by the Owner.
- F. The Manual(s) shall be identified by title on the front cover, back cover and spine and shall include the Name of Project, Name of Owner, Title of Manual (identifying type or name of equipment), and Project Completion Date.

End of Section

SCHEDULE OF VALUES

Section 01370

Part 1 – General:

1.01 – Related Requirements:

- A. Conditions of the Contract between Owner and Contractor.
- B. Section 01035 “Modification Procedures”
- C. Section 01700 “Contract Closeout”
- D. Section 01720 “Contract Record Documents”

1.02 – Form and Content of Schedule of Values:

- A. Submit Schedule of Values in duplicate, as soon as practicable after notification of selection for the award of Contract, and prior to the Scheduled Pre-Construction Meeting and start of work.
- B. Submit typed schedule on AIA Form G703 – Application and Certificate for Payment, Continuation Sheet. Identify schedule by including AIA Form G702, filling all the blanks in the upper portion.
- C. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- D. Elements included on Schedule of Values shall follow the Codification and Table of Contents as noted in this Project Manual as the format for listing and identifying component items.
- E. For each major line item list sub-values of major products or operations, as appropriate or requested by Owner’s Representative, under the line.
- F. For the various portions of the work:
 - 1. Each item shall include a directly proportional amount of the Contractor’s overhead and profit.
 - 2. For items on which progress payments will be requested for stored materials, break down the value into:

SCHEDULE OF VALUES
Section 01370

- a. The cost of materials, delivered and unloaded
 - b. The total installed value.
3. Submit schedule values of work prior to application for payment for such work.
- G. The sum of all values listed in the schedule shall equal the total Contract Sum.
- H. Revise schedule to list approved Change Orders, with each Application for Payment.

End of Section

Part 1 – General:

1.01 - Inspection and Tests:

- A. In addition to those components of the project specifically outlined in the Contract Documents for specialized testing and submittals, the Contractor shall not use any material or equipment in the work which has not been inspected and reviewed by reputable professionals qualified to review such materials and/or equipment. Ample time and opportunity shall be given the Owner's Representative for testing materials to be used in the work, should the Owner's Representative request additional testing. The Contractor shall promptly advise the Owner's Representative upon the placing of orders for materials so that arrangements may be made, if desired, for the testing of materials at the place of manufacture.
- B. The Owner may decide to have some or all of the materials inspected or tested as required. The Contractor shall furnish all samples, labor, materials and equipment necessary for the inspection and tests required and should anticipate possible delays caused by this testing and acceptance procedure. Scheduling shall be coordinated as necessary and the project schedule adapted, if needed.
- C. Seals and Pressure Testing: All piping, pumps and like equipment transporting liquid shall be first tested with water and then with the material they will carry when in final operation. The Contractor shall pay for all electric power and fuel necessary for the operation of all mechanical equipment prior to completion of the Contract. All equipment and appliances shall be subject to acceptance tests prior to final payment.
- D. The Owner's Representative or any person employed by him in connection with the work shall, at any time, have the right to enter upon the work and inspect the work and any materials being used in the work. Contractor shall provide ample time and facilities for such inspection. The contractor also shall provide all reasonable facilities for viewing the work by the owner or any representatives or Agencies having jurisdiction in regard to the work.

QUALITY CONTROL
Section 01400

1.02 – Experience of Equipment Manufacturer:

- A. Whenever it is written that an equipment manufacturer must have a specified period of experience with his product, a manufacturer who does not meet with the specified experience period can be considered. However, such manufacturer shall only be considered if the equipment supplier or manufacturer is willing to provide a Bond or Cash Deposit for the duration of the specified time period which will guarantee replacement of that equipment in the event of failure.

End of Section

TESTING LABORATORY

Section 01410

Part 1 – General:

1.01 – Requirements Included:

- A. Unless otherwise noted or required to be conducted by third parties or the Contractor by these Contract Documents or other sections of these Specifications, Owner will employ and pay for the services of an independent testing laboratory, as recommended by the Owner's Representative, to perform specified testing.
 - 1. If testing (or additional testing) is required, Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
 - 2. Employment of the laboratory shall in no way relieve Contractor's obligations to perform the work of the Contract, in accordance with the requirements of the Contract Documents.

- B. Owner will employ services of an independent testing laboratory, as recommended by Owner's Representative to perform specified testing on any material which the Owner or Owner's Representative feels may not comply with Contract Document Requirements.
 - 1. If results of these tests show that material does not conform to the requirements of the Contract Documents, the cost of testing shall be borne by the Contractor.
 - 2. If results of these tests show the material does conform to the requirements of the Contract Documents, the cost of testing shall be borne by the Owner.

1.02 – Qualification of Laboratory:

- A. Laboratory facilities, personnel, and materials must meet the "Recommended Requirements For Independent Laboratory Qualification", Published by the American Council of Independent Laboratories.
- B. Laboratory facilities, personnel, and materials must meet basic qualifications of appropriate ASTM testing requirements.
- C. Laboratory facilities and personnel, etc. shall be authorized to operate in the State, and municipality in which the project is located.
- D. Laboratory must submit a copy of Report of Inspection of Facilities made by materials referenced laboratory of National Bureau of Standards during the most recent tour of

TESTING LABORATORY

Section 01410

inspection, with memorandum of remedies of any deficiencies reported by the inspection.

- E. Testing Equipment: All Equipment must be calibrated at reasonable intervals by devices of accuracy traceable to either:
 - 1. National Bureau of Standards
 - 2. Accepted values of natural physical constants

1.03 – Laboratory Duties:

- A. Laboratory and Personnel shall cooperate with Owner's Representative and Contractor and provide qualified personnel after due notice.
- B. Laboratory shall notify Owner's Representative promptly after review of Contractor's proposed design mixes for concrete and other material mixes which require control by the testing laboratory so that Owner's Representative can approve, disapprove or modify them.
- C. Laboratory and/or testing agency shall secure adequate quantities of representational samples of materials proposed to be used and which require testing. Laboratory must furnish incidental labor and facilities to obtain and handle samples at the project site or at the source of the product to be tested.
- D. Laboratory and/or testing agency shall perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specified standards.
 - 2. Ascertain compliance of materials with requirements of Contract Documents.
- E. Laboratory and/or testing agency Promptly notify Owner's Representative and Contractor of observed irregularities or deficiencies of work or products.
- F. All work will be checked as it progresses, but failure to detect defective work or materials shall in no way prevent later rejection when such defect is discovered. Failure to detect defective work shall not obligate Owner's Representative for final review.
- G. Laboratory and/or testing agency personnel shall promptly submit typed or legibly printed report of each test and inspection. Distribution of reports shall be as

TESTING LABORATORY

Section 01410

determined at a Preconstruction Meeting between the Owner's Representative, Contractor and Representative of the Testing Laboratory. Each report shall include:

1. Date Issued.
 2. Project Title and Number.
 3. Testing Laboratory Name, Address, Email and Telephone Number.
 4. Name, Title, and Signature of Laboratory Inspector.
 5. Date, Time, and Location of Sampling or Inspection.
 6. Record of Temperature and Weather Conditions.
 7. Identification of Product and Specification Section.
 8. Type of Inspection or Test.
 9. Results of Tests and Determination of Compliance with Contract Documents.
 10. Further Interpretation of Test Results, when requested by Owner's Representative.
- H. Laboratory and/or testing agency shall perform additional tests as required by Owner's Representative or Owner if there is cause for concern that a particular material may not comply with Contract Document Requirements.

1.04 – Limitations of Authority of Testing Laboratory:

- A. Laboratory Is Not Authorized To:
1. Release, revoke, alter or enlarge on requirements of Contract Documents.
 2. Approve or accept any portion of the work.
 3. Perform any duties of the Contractor.

1.05 – Contractor's Responsibilities:

- A. Use of testing services shall in no way relieve Contractor of responsibility to furnish materials and construction in compliance with Plans and Specifications.
- B. Contractor shall cooperate with laboratory personnel, and provide access to work and to manufacturer's operations.
- C. Contractor shall provide to the laboratory and the Owner's Representative for review, the preliminary design mix proposed to be used for concrete and other materials mixes which require control by the testing laboratory.
- D. Contractor shall furnish copies of product test reports as required.
- E. Contractor shall furnish all Incidental Labor and Facilities to:

TESTING LABORATORY

Section 01410

1. Provide access to work to be tested.
 2. Facilitate inspections and tests.
 3. Store and cure test samples, as required.
- F. Contractor must notify laboratory sufficiently in advance of operations to allow for laboratory assignments of personnel and scheduling of tests. Procedure shall be as determined at a Preconstruction Meeting between Owner's Representative, Contractor and Testing Laboratory Representative.
1. When tests or inspections cannot be performed after such notice, promptly notify Owner's Representative and reimburse Owner for laboratory personnel and travel expenses incurred due to Contractor's negligence. No claims for delays shall be allowed if work must be rescheduled due to the unavailability of laboratory personnel.
- G. Contractor shall employ and pay for the services of the same or a separate, equally qualified independent testing laboratory, approved by the Owner and Owner's Representative, to perform additional inspections, sampling and testing required for the Contractor's convenience or when initial tests indicate work does not comply with the requirements of the Contract Documents.

1.06 – Specific Tests, Inspections and Methods Required:

- A. Refer to other Sections of the Specifications for specific Testing and Inspection requirements of materials.

End of Section

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

Section 01500

Part 1 – General:

1.01 – Requirements Included:

- A. Contractor shall furnish, install and maintain construction facilities and temporary controls required for construction, as specified herein, and remove said construction facilities and temporary controls on completion of work.

1.02 – Regulatory Agencies:

- A. Contractor shall comply with all Federal, State and Local Codes, Laws, Ordinances and Regulations and with all pertinent utility company requirements.

Part 2 – Products:

2.01 – Materials, General:

- A. Material may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.
- B. Contractor shall coordinate any and all interruptions of permanent utilities with utility companies and affected users.

2.02 – Temporary Sanitary Facilities:

- A. Contractor shall provide sanitary facilities in compliance with local, state, and federal laws and regulations. Such facilities shall be properly secluded from public view.
- B. Contractor shall service, clean and maintain facilities and enclosures.

2.03 – Hoisting Facilities:

- A. Contractor shall provide hoisting facilities as required for the vertical movement of all materials.
- B. Contractor and Facilities or Materials shall comply with OSHA, and all local, state, and federal regulations.
- C. Contractor shall maintain all facilities in compliance with the law.

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

Section 01500

2.04 – Temporary Barriers:

- A. Contractor must provide barricades, guards, coverings, lighting, warning lights and signs as required by Federal, State, and Local Regulations to protect obstructions in streets and sidewalks, open trenches and pits, hazards and like items. Mark and light barricades and guards as required.
- B. The Contractor shall, at times, employ watchmen when such action is required to prevent injury or damage to the public. The contractor shall indemnify and protect the Owner from any damage or injury caused by any act or neglect of the Contractor or his Subcontractors.
- C. Contractor shall comply with OSHA and all local, state, and federal regulations with regard to standards and requirements for guardrails, openings and stairways.

2.05 – Protection:

- A. The contractor shall at all times protect excavations, trenches, new construction, old construction, all job materials, apparatus and fixtures from rain, wind, snow, ice, dust, dirt, mud, ground water, back-up or leakage of sewers, drains, or other piping and from water of any other origin and shall remove promptly any accumulation of the above. Contractor shall provide and operate all pumps, piping and other equipment necessary to this end at no additional cost to Owner.
- B. Contractor shall thoroughly protect all completed work and all stored materials.
- C. When needed, Contractor shall provide boards, cloths, planks, waterproof paper, canvas or other approved protection and use as necessary to prevent any damage.
- D. Contractor must provide protective measures to prevent damage to lawns, trees and shrubs specified to remain after project is complete.
- E. At the end of each day's work, Contractor shall protect such work that may be susceptible to damage by the elements.
- F. Contractor shall replace or rectify work or materials damaged by workmen, by the elements or by any other cause, to the satisfaction of the Owner's Representative at no additional expense to the Owner.
- G. Contractor shall repair streets, curbs, sidewalks, poles, grass, shrubs, trees or other existing site features, if disturbed by construction operations or contractor personnel. Contractor must leave all existing site features specified to remain in as good condition as they were before being disturbed.

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

Section 01500

- H. Do not allow workmen, including those of any Subcontractor or supplier to mark finished surfaces with marking pens or other such devices which are not readily erasable.

2.06 – Traffic:

- A. The Contractor shall at all times keep roads and sidewalks open for pedestrian and vehicular traffic. The Contractor shall bridge or construct plank crossing over trenches where required or as directed by the Owner's Representative.
- B. When portions of a travel way are made dangerous for the movement of vehicles or pedestrians, the Contractor shall employ a sufficient number of uniformed police officers, flagmen, or traffic men to direct the traffic safely through the area as required by Federal, State, and Local Regulations. If such conditions exist at the close of the working day, a watchman and a sufficient number of flagmen or police officers shall be assigned by the Contractor to direct traffic at night. The work must be planned to avoid such conditions whenever possible. Cost for traffic control shall be included in the Base Bid and born by the Contractor.

2.07 – Security:

- A. The Contractor shall take all precautions necessary to prevent loss or damage caused by vandalism, theft, burglary, pilferage, or unexplained disappearance of property of the Owner or this Contractor, whether or not forming part of the work, located within the limits of work. The contractor shall have full responsibility for the security of such property located in such areas and shall reimburse the Owner for any such loss, damage or injury, except such as may be directly caused by agents or employees of the Owner.

2.08 – Project Access:

- A. Contractor shall provide access from adjacent road, as approved by the Owner, and maintain such access in a safe and neat condition throughout the construction process. Construction Access, as coordinated with Owner, shall be protected throughout construction through use of RIDOT Standard 9.9.0 Construction Access. Contractor shall inspect Construction Access Regularly, and repair access as needed to ensure access meets the standards of RIDOT Standard 9.9.0.
- B. Storage areas shall be as directed and approved by the Owner. Storage areas shall be protected in accordance with Drawings and General Provisions of Contract, including General and Supplementary Conditions, Section 01060 of these Specifications, and Division 2 Specification Sections as they apply to work of this Section.

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

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2.09 – Temporary Controls:

- A. Erosion and Sediment Control: Sufficient precautions shall be taken during construction to minimize the run-off of polluting substances such as silt, clay, soils, fuels, oils, calcium chloride or other polluting materials harmful to humans, or other life, into supplies and surface waters of the State as required by Federal, State and Local Regulations. Contractor shall abide by all local, state, and federal regulations and all components of the approved Soil Erosion and Sediment Control Plan.
 - 1. Contractor shall ensure all Soil Erosion and Sediment Control Devices, such as Haybales, Silt Fence, and Silt Socks are installed in accordance with Contract Drawings, approved Soil Erosion and Sediment Control Plan, and other pertinent sections of these Specifications.
- B. Control of Snow and Ice: Contractor shall remove snow and ice as required for safety, access, and proper execution of work. Remove snow and ice build-up which endanger structures during construction. Cost for snow and ice removal shall be included in the Base Bid and born by the Contractor. No extra payment will be made for such work.
- C. Dust Control: During periods of dry weather, water, Contractor shall spread calcium chloride or otherwise treat unpaved areas, within contract limits in accordance with all local, State and Federal Regulations, and the approved Soil Erosion and Sediment Control Plan, which may be source of dust nuisance. Treatment shall be of sufficient effectiveness to allay dust nuisance.
- D. Trash Control:
 - 1. Contractor shall maintain premises and properties free from accumulation of waste, debris and rubbish caused by operations.
 - 2. Contractor must provide sufficient trash receptacles around site.
 - 3. Contractor shall collect and deposit debris in appropriate and legal collection facilities.
 - 4. Contractor shall remove all debris from the job site on a regular basis.
- E. Hazards Control:
 - 1. Contractor shall store volatile wastes in sealed covered containers, approved for storage of such wastes, in accordance with all local, State, and Federal regulations, and remove wastes from premises daily.

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

Section 01500

2. Contractor must prevent accumulation of wastes which create hazardous conditions.
3. Contractor shall provide adequate ventilation during use of volatile or noxious substances.
4. Should any hazardous waste be caused by the Contractor, the Contractor shall correct the situation in the proper, legal manner and remove and dispose such waste at no loss or cost to the Owner.

F. Cleaning and Disposal:

1. Contractor shall conduct cleaning and disposal operations in compliance with all Local, State, and Federal Ordinances and Anti-Pollution Laws.
2. Contractor must not burn or bury rubbish or waste materials on project site.
3. Contractor must not dispose of volatile wastes such as mineral spirits, oil or paint thinner, etc., in storm or sanitary drains, or waters of the State.
4. Contractor must not dispose of wastes into streams or waterways.
5. Contractor shall maintain cleaning procedures until project or portion thereof is occupied by Owner.

G. Storage Areas:

1. Contractor shall coordinate the allocation of storage areas to the various trades and Subcontractors.
2. All storage areas shall be approved by the Owner's Representative.
3. Contractor must maintain all storage areas in a clean condition at all times.
4. Field houses, storage sheds, and work facilities for workmen shall be the responsibility of the Contractor or their Sub-Contractors and shall be removed by them following construction procedures for each task these facilities may be needed.

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

Section 01500

Part 3 – Execution:

3.01 – General:

- A. Contractor must maintain and operate temporary utility systems, where necessary, to assure continuous service. Such temporary utility systems must be modified and extended by the Contractor as work progress requires.

3.02 – Length of Trench to be Opened:

- A. The length of trench to be opened at any time, from the point where ground is being broken to completed backfill, and also the amount of space in streets or public and private lands occupied by equipment, trench and supplies, shall not exceed the length or space considered reasonably necessary for installation of work.
- B. In determining the length of open trench or spaces for equipment, materials, supplies, and other necessities: The Contractor will consider the nature of the lands or streets where work is being done, types and methods of construction and equipment being used, inconvenience to the public or to private parties, and possible dangers and other proper matters. All work must be constructed with a minimum of inconvenience and danger to the public and all other parties concerned.
- C. Whenever any trench obstructs pedestrian and vehicular traffic in or to any public street, private driveway or property entrance, or on private driveway or property entrance, or on private property, the Contractor shall take such means as may be necessary to maintain pedestrian and vehicular traffic and access. Until such time as the work may have attained sufficient strength to support backfill, or if for any other reason it is not expedient to backfill the trench immediately, the Contractor shall construct and maintain suitable plank crossings and bridges to carry essential traffic in or to the street, driveway, or property in question as specified or directed.
- D. Contractor shall furnish and maintain all suitable signs, lights, and such required items to direct traffic.
- E. The Contractor must keep streets and premises free from unnecessary obstructions, debris and all other materials. The Owner's Representative may, at any time, order all equipment, materials, surplus from excavations, debris and all other materials lying outside that length of working space promptly removed. Should the Contractor fail to remove such material within twenty four (24) hours after notice to remove the same, the Owner's Representative may cause any part or all of such materials to be removed by such persons as he may employ, at the Contractor's expense and may deduct the cost thereof from payment which may be or may become due to the Contractor under the Contract. In special cases, where public safety urgently demands it, the Owner's Representative may cause such materials to be removed without prior notice.

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3.03 – Interference with Existing Structures:

- A. Whenever it may be necessary to cross or interfere with existing culverts, drains, water pipes or fixtures, guardrails, fences or other such structures needing special care, due notice shall be given by the Contractor to the Owner's Representative and to the various public and private agencies or individuals responsible for the utility or structure that is interfered with.
- B. Whenever required, all objects shall be strengthened by the Contractor to meet any additional stress that the work herein specified may impose upon it. Any damage caused shall be thoroughly repaired by the Contractor at their own expense. The entire work shall be the responsibility of the Contractor. All damaged items of work or items required to be removed and replaced or repaired by the Contractor to the complete satisfaction of the property Owners and/or the Owner's Representative, shall be repaired or replaced at no additional expense to the Owner.

3.04 – Removal of Water and Protection from Flooding:

- A. The Contractor shall construct and maintain, at no additional expense to the Owner, all pumps, drains, well-points or any other facility for the control and collection of groundwater and/or surface water and provide all pumps and piping for the removal of water from the trenches and excavations so that all trenches and excavations may be kept at all times free from water and so that all construction work may be performed in dry conditions.
- B. Any damage resulting from the failure of the dewatering operations of the Contractor and any damage resulting from the failure of the Contractor to maintain the areas of all work in a suitable dry condition shall be repaired by the Contractor as directed by the Owner's Representative at no additional expense to the Owner.
- C. The Contractor's pumping and dewatering operations shall be carried out in such a manner as to prevent damage to existing structures and utilities and the contract work and so that no loss of ground will result from these operations. Precautions shall be taken by the Contractor to protect new and existing work and/or to maintain satisfactory progress.
- D. All pipelines or structures not stable against uplift during construction or prior to completion shall be thoroughly braced or otherwise protected by the Contractor.
- E. Water from the trenches, excavations, and drainage operations shall be disposed of by the Contractor in such a manner as will neither cause public nuisance nor cause injury to public health nor to public or private property nor to the work completed nor to

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Section 01500

work in progress. No extra payment will be made for the removal of water, protection from flooding, drainage work, diversion of existing water courses and such other work, but compensation therefore shall be considered as having been included in the prices stipulated for the appropriate items of work as listed in the Base Bid.

3.05 – Removal of Construction Facilities and Temporary Controls:

- A. Contractor shall completely remove temporary materials and equipment when their use is no longer required.
- B. Upon completion of work of all trades and before final acceptance of entire project, each trade shall remove, at own expense, all wiring, appurtenances, and accessories used in performance of its respective work.
- C. Temporary sheds, utilities, barricades, signs and other appurtenances related to execution of the work, and not incorporated in the permanent construction, shall be completely removed by the Contractor from the site prior to acceptance of work by Owner.
- D. Contractor shall clean and repair any and all damage caused by temporary installations or use of temporary facilities.

End of Section

MATERIAL AND EQUIPMENT

Section 01600

Part 1 – General:

1.01 – Requirements Included:

- A. Material and Equipment Incorporated Into the Work:
 - 1. Shall conform to applicable Specifications and Standards.
 - 2. Shall comply with size, make, type and quality specified or as specifically reviewed by the Owner’s Representative.
- B. Manufactured and Fabricated Products:
 - 1. Products shall be designed, fabricated, and assembled in accordance with the best engineering and shop practices and Industry Standards.
 - 2. Like parts of duplicate units shall be manufactured to standard sizes and gages, to be interchangeable.
 - 3. Two (2) or more items of the same kind shall be identical and manufactured by the same manufacturer.
 - 4. Products shall be suitable for service conditions.
- C. Equipment capacities, sizes, and dimensions shown or specified shall be adhered to unless variations are specifically reviewed and approved by Owner’s Representative.
- D. Contractor shall not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 – Manufacturer's Instructions:

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, Contractor shall obtain and distribute copies of such instructions to parties involved in the installation, including two (2) copies to Owner’s Representative.
- B. Contractor shall maintain one (1) set of complete instructions at the job site during installation and until completion. Copies of all instructions shall be included in final Contract Record Documents, as assembled by the Contractor.

MATERIAL AND EQUIPMENT

Section 01600

- C. Contractor shall handle, install, connect, clean, prepare, acclimatize, and adjust products in strict accord with such instructions and in conformity with specified requirements.
- D. Should job conditions or specified requirements conflict with manufacturer's instructions, Contractor shall consult with Owner's Representative for further instructions.
- E. Contractor shall not proceed with work without clear instructions.
- F. Contractor shall perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.03 – Transportation and Handling:

- A. Contractor must arrange deliveries of products in accordance with construction schedules, and coordinate appropriately so as to avoid conflict with work and conditions at the site and when two (2) or more trades, Contractors or suppliers are involved.
- B. All materials and equipment shall be transported on legally approved conveyances as required or recommended by the respective manufacturer or supplier.
- C. All products shall be delivered in undamaged condition, in manufacturer's original containers or packaging, and with identifying labels intact and legible.
- D. Contractor shall receive and handle all materials and equipment, at the project site, by conveyances or methods as recommended by the respective manufacturer or supplier to prevent damage to products.
- E. Immediately on delivery, Contractor shall inspect shipments to assure compliance with requirements of Contract Documents and reviewed submittals, and that products are properly protected and undamaged.
- F. Contractor shall remove from the site any material or item of equipment damaged during the transportation or handling process and immediately replace at no additional cost to the Owner.

MATERIAL AND EQUIPMENT

Section 01600

1.04 – Storage and Protection:

- A. Products shall be stored in accordance with manufacturer's instructions with seals and labels intact and legible.
- B. Contractor shall store products subject to damage by the elements in weather tight enclosures.
- C. Contractor shall take appropriate measures to maintain temperature and humidity of materials within the ranges required by manufacturer's instructions.
- D. Contractor shall maintain all storage areas in a clean and orderly condition at all times.

1.05 – Exterior Storage:

- A. Contractor shall store fabricated products above the ground, on blocking and skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, and provide adequate ventilation to avoid condensation.
- B. Loose granular materials shall be stored in a well-drained area on solid surfaces to prevent mixing with foreign matter.
- C. Contractor shall arrange storage in a manner to provide easy access for inspection. Contractor shall make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- D. Contractor must immediately replace any material or item of equipment damaged due to inadequate storage protection at no additional cost to the Owner.

1.06 – Protection after Installation:

- A. Contractor shall provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove Protections only when they are no longer needed.

MATERIAL AND EQUIPMENT

Section 01600

1.07 – Certificates of Conformance and Manufacture:

- A. In addition to other requirements specified therein, the Contractor shall furnish to the Owner's Representative, in the manner as directed, three (3) notarized certificates of conformance and manufacture that all materials and/or equipment to be furnished under this Contract meets the Specification Requirements. When directed, each shipment of material shall be accompanied by the manufacturer's notarized certificates of conformance and manufacture. Unless otherwise specified, all testing of materials shall be provided by the Contractor at no additional expense to the Owner.
- B. Each manufacturer's certificate shall be endorsed or accompanied by the Contractor's certificate that the material certified by the manufacturer will be the material incorporated in the work.

End of Section

SUBSTITUTIONS

Section 01631

Part 1 – General:

1.01 – Related Documents:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.02 – Summary:

- A. This Section includes administrative and procedural requirements for handling requests for substitutions made after award of the Contract.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Section 01340 “Shop Drawings, Product Data and Samples”
 - 2. Section 01600 “Materials and Equipment”

1.03 – Definitions:

- A. Definitions in this Article do not change or modify the meaning of other terms used in the Contract Documents.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction required by the Contract Documents that are proposed by the Contractor after award of the Contract are considered to be requests for substitutions. The following are not considered to be requests for substitutions:
 - 1. Substitutions requested during the bidding period, and accepted by Addendum prior to award of the Contract, are included in the Contract Documents and are not subject to requirements specified in this Section for substitutions.
 - 2. Revisions to the Contract Documents requested by the Owner or Owner’s Representative.
 - 3. Specified options of products and construction methods included in the Contract Documents.
 - 4. The Contractor’s determination of and compliance with governing regulations and orders issued by governing authorities.

SUBSTITUTIONS

Section 01631

1.04 – Submittals:

- A. Substitution Request Submittal: The Owner’s Representative will consider requests for substitution if received within 14 days after commencement of the Work. Requests received more than 14 days after commencement of the Work may be considered or rejected at the discretion of the Owner’s Representative.
1. Contractor shall submit copies of each request for substitution for consideration to the Owner’s Representative. Submit requests in the form and according to procedures required for change-order proposals.
 2. Contractor shall identify the product or the fabrication or installation method to be replaced in each request. Include related Specification Section and Drawing numbers for reference.
 3. Contractor shall provide complete documentation showing compliance with the requirements for substitutions, and the following information, as appropriate:
 - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by the Owner and separate contractors, that will be necessary to accommodate the proposed substitution.
 - b. A detailed comparison of significant qualities of the proposed substitution with those of the Work specified. Significant qualities may include elements, such as performance, weight, size, durability, and visual effect.
 - c. Product Data, including Drawings and descriptions of products and fabrication and installation procedures.
 - d. Samples, where applicable or requested.
 - e. A statement indicating the substitution’s effect on the Contractor’s Construction Schedule compared to the schedule without approval of the substitution. Indicate the effect of the proposed substitution on overall Contract Time.
 - f. Cost information, including a proposal of the net change, if any in the Contract Sum.
 - g. The Contractor’s certification that the proposed substitution conforms to requirements in the Contract Documents in every respect and is appropriate for the applications indicated.

SUBSTITUTIONS

Section 01631

responsibilities the Owner must assume. The Owner's additional responsibilities may include compensation to the Owner's Representative for redesign and evaluation services, increased cost of other construction by the Owner, and similar considerations.

7. The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.
 8. The specified product or method of construction cannot be provided in a manner that is compatible with other materials and where the Contractor certifies that the substitution will overcome the incompatibility.
 9. The specified product or method of construction cannot be coordinated with other materials and where the Contractor certifies that the proposed substitution can be coordinated.
 10. The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Contractor certifies that the proposed substitution provides the required warranty.
- B. Where a proposed substitution involves more than one prime contractor, each contractor shall cooperate with the other contractors involved to coordinate the Work, provide uniformity and consistency, and assure compatibility of products.
- C. The Contractor's submittal and the Owner's Representative's acceptance of Shop Drawings, Product Data, or Samples for construction activities not complying with the Contract Documents do not constitute an acceptable or valid request for substitution, nor do they constitute approval.

Part 3 – Execution (Not Applicable)

End of Section

CONTRACT CLOSE-OUT

Section 01700

Part 1 – General:

1.01 – Requirements Included:

- A. Comply with requirements stated in conditions of the Contract and in Specifications for administrative procedure in closing out the work.

1.02 – Substantial Completion:

- A. Substantial Completion: As defined by the AIA, and defined herein in accordance with these Specifications, “Substantial Completion” is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or use the Work or a portion thereof for its intended use.
- B. When Contractor considers the work is substantially complete, he or she shall submit to Owner’s Representative for review:
 - 1. A written notice that the work or designated portion thereof is “Substantially Complete”.
 - 2. A list of items to be completed or corrected prior to achievement of Final Completion (to be referred to as “Punch List”).
- C. Within a reasonable time after receipt of such notice, Owner’s Representative will review the work to determine the status of completion.
- D. Should Owner’s Representative determine that the work is *not* “Substantially Complete”:
 - 1. Owner’s Representative will promptly notify the Contractor in writing, giving the reasons therefore.
 - 2. Contractor shall remedy the deficiencies in the work and send a second written notice of substantial completion to the Owner’s Representative.
 - 3. Owner’s Representative will again review the work.
- E. When Owner’s Representative concurs that the work is substantially complete, he will:

CONTRACT CLOSE-OUT

Section 01700

1. Prepare a Certificate of Substantial Completion accompanied by Contractor's list of items to be completed or corrected (Punch List), as verified and amended by the Owner's Representative.
2. Submit the Certificate to Owner, Contractor, and Manufacturer (as may be appropriate) for their written acceptance of the responsibilities assigned to them in the Certificate.

1.03 – Final Review:

- A. When Contractor considers the work is complete, he shall submit written certification that:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents, including completion of all Punch List Items.
 4. Equipment and systems have been tested in the presence of the Owner's Representatives and are operational.
 5. All Work is complete and ready for final review.
- B. Owner's Representative will make final review to verify that status of completion with reasonable promptness after receipt of such certification.
- C. Should Owner's Representative consider that the work is incomplete or defective:
 1. Owner's Representative will promptly notify the Contractor in writing, listing the incomplete or defective work.
 2. Contractor shall take immediate steps to remedy the stated deficiencies, and send a second written certification to Owner's Representative that the work is complete.
 3. Owner's Representative will again review the work.
- D. When the Owner's Representative finds that the work is acceptable under the Contract Documents and that all Punch List Items have been accomplished to the

CONTRACT CLOSE-OUT

Section 01700

Owner's Representative's satisfaction, he or she shall request the Contractor to make close-out submittals.

1.04 – Fees for Additional Reviews:

- A. Should Owner's Representative perform additional reviews due to failure of the work to comply with the claims of status of completion made by the Contractor:
 - 1. Owner will compensate Owner's Representative for such additional services.
 - 2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.05 – Contractor's Close-Out Submittal to Owner's Representative:

- A. Operation, Instruction, and Maintenance Manual: Contractor shall provide bound copies of the Operation, Instruction, and Maintenance Manual, in accordance with Section 01340 of these Specifications.
- B. Operating and Maintenance Data:
 - 1. Contractor shall instruct the Owner's Personnel with regard to equipment, systems and operating specialties which are installed as part of this project.
 - 2. Contractor shall submit brochures indicating operating instructions and maintenance schedules for all equipment, systems, operating devices and specialties.
 - 3. Contractor shall submit detailed maintenance methods and schedules for all materials and equipment provided in this project.
- C. Warranties, Guarantees and Bonds: In addition to the Warranty and Guarantee Requirements of the General Conditions, provide all other guarantees, bonds, affidavits, and certifications required throughout the Specifications.
- D. Contractor shall provide all spare parts and maintenance materials to Owner, unless otherwise specified.

1.06 – Final Adjustment of Accounts:

- A. Submit a Final Statement of Accounting to Owner's Representative.

CONTRACT CLOSE-OUT
Section 01700

1. Statement shall reflect all adjustments to the Contract Sum, including:
 - a. The original Contract Sum.
 - b. Additions and deductions resulting from:
 - i. Previous Change Orders.
 - ii. Allowances
 - iii. Unit Prices
 - iv. Deductions for non-corrected work
 - v. Penalties and Bonuses
 - vi. Deductions for Liquidated Damages
 - vii. Deductions for Re-inspection Payments
 - viii. Other adjustments
 2. Total Contract Sum, as adjusted.
 3. Previous Payments
 4. Sum Remaining Due
- B. Owner's Representative will prepare a Final Change Order reflecting approved adjustments to the Contract Sum which were not previously made by Change Orders.

1.07 – Final Application for Payment:

- A. Contractor shall submit the Final Application for Payment in accordance with procedures and requirements stated in the Conditions of the Contract.

End of Section

CONTRACT RECORD DOCUMENTS

Section 01720

Part 1 – General:

1.01 – Requirements Included:

- A. Maintain at the site for the Owner one (1) record copy of:
 - 1. Drawings
 - 2. Specifications
 - 3. Addenda
 - 4. Change Orders and other Modifications to the Contract
 - 5. Owner’s Representative Field Orders or Written Instructions
 - 6. Reviewed Shop Drawings, Product Data and Samples
 - 7. Field Test Records
 - 8. Copies of All Environmental Permitting Documents in accordance with Section 01060 of these Specifications.

- B. The Contractor will be required to furnish at no additional expense to the Owner, the services of a Surveyor and/or Engineer registered in the State where the project is located and under whose direction shall be obtained and recorded all surveys, measurements, and such other data required for the determination of the as-built records of the construction of all site work (see Section 01050 of these Specifications).

1.02 – Maintenance of Documents and Samples:

- A. Maintain all documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

1.03 – Marking Devices:

- A. Provide felt tip marking pens for recording information in the color code designated by Owner’s Representative.

1.04 – Recording:

- A. Label each document "Contract Record" or "Project Record" in neat large printed letters (for the purposes of these Specifications, the terms "Contract Record" and "Project Record" shall be interchangeable. Both shall require full adherence to these Contract Documents and will serve to be the record documents of the project.

- B. Record information concurrently with construction progress.

- C. Do not conceal any work until required information is recorded.

CONTRACT RECORD DOCUMENTS

Section 01720

- D. As-Built Drawings: Principal dimensions, elevations and other data, as required, shall be recorded for all work, such as:
1. Significant deviation of any nature made during construction.
 2. Location of underground mechanical and electric services, pipe, valves, fittings and appurtenances, referenced to permanent surface improvements.
 3. Location of mechanical and electrical services, utilities and appurtenances that are concealed by construction, referenced to accessible features of the completed construction.
 4. Field changes of dimension and detail.
 5. Changes made by Field Order or by Change Order.
 6. Details not on original Contract Drawings.
- E. The marked-up prints shall be inspected as needed by the Owner's Representative and shall be corrected immediately if found either inaccurate or incomplete.
- F. Specifications and Addenda: Legibly mark each section to record:
1. Manufacturer, trade name, catalog number and supplier of each product and item of equipment actually installed.
 2. Changes made by Field Order or by Change Order.

1.05 – As-Built Drawings:

- A. At the completion of the project, the record prints shall be submitted to the Owner's Representative for final review and comment.
- B. The Contractor shall correct, amplify and do all other work as may be required by the Owner's Representative to complete the Drawings in a manner satisfactory to the Owner's Representative.

1.06 – Submittal:

- A. At Contract Close-out, deliver record documents to Owner's Representative for the Owner.

CONTRACT RECORD DOCUMENTS
Section 01720

- B. Accompany submittal with transmittal letter in duplicate, containing:
1. Date
 2. Project Title and Number
 3. Contractor's Name and Address
 4. Title and Number of Each Record Document
 5. Signature of Contractor or his Authorized Representative

End of Section

SITE CLEARING AND PREPARATION

Section 02100

Part 1 – General:

1.01 – Related Documents:

- A. Drawings and General Provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.
- B. This portion of the specifications shall conform to Section 201: Site Preparation of the *Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition*, as amended by the RIDOT, and as amended as follows:
 - a. Delete Section 201.04 - Method of Measurement
 - b. Delete Section 201.05 - Basis of Payment

1.02 – Description of Work:

- A. Provide all materials, equipment and labor necessary to complete the work as indicated on the Drawings or as specified herein.
- B. The principal work of this Section includes, but may not be limited to the following:
 - 1. Site clearing
 - 2. Unclassified Excavation
 - 3. Sawcutting existing pavement
 - 4. Pavement removal
 - 5. Dust control
 - 6. Root Zone Protection
 - 7. Tree Bark Protection
 - 8. Pruning

1.03 – Regulatory Requirements:

- A. Conform to applicable codes for disposal of debris.
- B. Contractor to verify location of all utilities, both underground and overhead, before excavation begins in accordance with the “Dig Safe Program Law” enacted by the Rhode Island legislature and by calling 811 or 888-DIG-SAFE and individual utility companies. Excavation shall be in accordance with all statutes, ordinances, rules and regulations of any Town, State or Federal agency that may be applicable. Any damage to existing utilities shall be the Contractors responsibility.

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Part 2 – Products:

2.01 – Calcium Chloride for Dust Control:

- A. Calcium chloride shall only be utilized when necessary for Dust Control, and shall meet the requirements of RIDOT Standard Specifications, as amended, and all environmental regulations and permits applicable.
- B. Calcium chloride shall have weights marked on the shipping containers to be used, or if directed by Owner's Representative, scales shall be furnished by and at Contractor's expense to measure calcium chloride by the ton.

2.02 – Snow Fencing for Root Protection:

- A. Bright colored synthetic snow fencing, erected with 8' interval wood stakes or steel posts. Conform to RIDOT Standards 51.1.1 and 51.2.0

2.03 – Tree Bark Protection:

- A. Protect trees (other than those specified for removal) that fall within or immediately adjacent to the temporary limit of disturbance as indicated on plans.
- B. Wood Framing:
Wood Framing shall conform to RIDOT Standard 51.1.0 and consist of nominal lumber 8 feet in length; the width and thickness shall be 2" x 4" but may vary from 2" x 2" to 2" x 6", depending on diameter of tree
- C. Strapping:
Strapping shall conform with RIDOT Standard 51.1.0, and consist of Single Strand 9 gauge steel wire or ½" strapping stapled to each piece of wood.

Part 3 – Execution:

3.01 – Protection:

- A. Contractor shall protect plant growth and features remaining as final landscaping. All existing vegetation (trees, shrubs, grasses, etc.) to remain shall be protected from injury. Individual trees and shrubs to be saved within or immediately adjacent to the designated work area shall be adequately protected by Contractor as part of this Contract. Protect existing lawn areas not to be disturbed by snow fencing similarly as trees and shrubs, and as shown in RIDOT Standard 51.1.1. Remove all protective barriers following construction procedures as directed by Owner

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- B. Existing vegetation, not called out to be removed and disposed, not adequately protected and damaged during construction shall be replaced with plants equal to or better than existing by the Contractor at no additional cost to the Owner. Contractor shall employ licensed Arborist to carefully prune branches in the way of construction. Only approved methods and tools will be permitted. Use of axes for trimming or spurs for climbing will not be permitted.
- C. Contractor shall protect all benchmarks and existing work from damage or displacement.

3.02 – Site Clearing (General):

- A. Contractor shall clear areas required for access to site and execution of work as designated on Plans.
- B. Contractor shall establish Limits of Disturbance and place silt control as necessary (see sections 01060, 01500, and 02270 of this Project Manual).
- C. Removal of Vegetation, other than those areas noted as “by others” on the Contract Drawings: Contractor shall clear designated areas of all stumps, roots and other objectionable material, remove such material from the site, and dispose of material in legal manner. Stumps including root system shall be removed to minimum six (6) inches below finish grade, where stump falls within landscape areas. Stumps including root system of plants designated to be removed shall be removed entirely where they fall within designated pavement and weed control areas. Do not disturb root systems of existing trees to remain.
- D. Any poison ivy, Bittersweet, Japanese Knot Weed, Bull Briar or other noxious weeds remaining in cleared areas shall receive a foliar spray of herbicide approved by regulatory authorities for use in aquatic sites. This work shall be conducted by the Contractor or their Subcontractor. Any herbicides, pesticides, or similar controlled chemicals/substances shall be applied only by licensed technician according to State Regulations.
- E. Contractor shall remove all debris not including existing topsoil, from this work to an off-site location, and dispose of legally.

3.03 – Stripping Of Topsoil:

- A. Contractor shall not mix topsoil with subsoil or other materials.
- B. Unless specified by the Owner’s Representative, or found to be unsuitable, Contractor shall not remove existing topsoil from the site.

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- C. All retained/stockpiled existing topsoil shall be redistributed on site by Contractor where topsoil is proposed in accordance with these contract documents.

3.04 – Saw Cutting:

- A. When required, Contractor shall cut pavement and/or concrete structures to the full depth of the course or courses. In removing any existing pavement, top course and/or base course, or combination thereof, the sections to be removed shall be cut to the neat lines shown on the Plans or as directed by the Owner's Representative. Portions of remaining pavements injured or destroyed by the Contractor's work shall be replaced by the Contractor without additional compensation. Saw cuts shall be neat and straight to the approval of the Owner. Additional saw cuts, to the approval of the Owner's Representative, shall be made at no additional cost when the initial cuts are unacceptable.

3.05 – Pavement Removal:

- A. Contractor shall remove with the proper equipment, bituminous concrete, oil penetration and/or portland cement concrete pavements in varying depths. Where a remainder of the pavement is to remain, a clean saw cut to the full depth of pavement shall be made to separate that pavement from the one being removed.
- B. All utilities, gate hoses, catch basins, manholes, frames, covers and other miscellaneous items scheduled to remain or as directed by the Owner's Representative shall be protected from damage and shall be reset, repaired, or replaced by the Contractor to grade as required by the Owner's Representative.
- C. Unless otherwise directed by Owner's Representative, or required for inspection, Contractor shall immediately dispose of all waste material legally to an off-site location or as directed by the Owner's Representative.
- D. Contractor shall remove to full depth, all pavement scheduled for removal. A maximum of one (1) inch below pavement of the base material shall be removed during this work when new paving shall be placed. Base material removed to a depth lower than one (1) inch shall be replaced, spread and compacted to the satisfaction of the Owner's Representative. Such work shall be at the Contractor's expense. No additional payment for this work will be made. In areas where no new paving shall be placed, remove pavement and base to a total minimum depth of twelve (12) inches below proposed final grades.

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3.06 – Unclassified Excavation:

- A. Contractor shall excavate and remove all unsuitable material such as defective gravel bases, bricks, brick or stone and mortar walls, blocks, curbing, conduits, pavements, Boulders over two (2) feet in diameter, Concrete foundations or footings that require jackhammer demolition, and any other waste materials or debris that is not scheduled for removal under other sections of the specifications.
- B. At the direction of the Owner's Representative, Contractor shall legally dispose of all unclassified excavation at an off-site location immediately after removal.

3.07 – Dust Control:

- A. Contractor shall provide all equipment, labor, materials and related work necessary for the prevention and control of dust resulting from operations in the performance of the work of this Contract and in accordance with additional requirements specified herein. All costs in connection therewith shall be considered to be included in the various Unit and/or Lump Sum Prices Bid for the various items as listed in the Bid.
- B. When in the opinion of the Owner's Representative, conditions at the site are such as to require dust control measures to supplement those required to be provided by the Contractor as described in the preceding paragraph, the Owner's Representative may direct the Contractor to furnish and spread dust prevention measures over certain designated areas at the site, by approved mechanical devices at the rate for each area as required at no additional cost to the Owner.
- C. Calcium Chloride, if utilized, shall meet the requirements of RIDOT Standard Specifications.

3.08 – Pruning:

- A. All pruning shall be performed by a Certified Arborist.
- B. Contractor shall prune trees to remove suckers, interfering branches, dead or diseased wood, and broken or deformed branches and in such a manner as to preserve the natural character of the plant. Only approved methods and tools will be permitted. Use of axes for trimming or spurs for climbing will not be permitted.
- C. Perform all pruning with clean, sharp tools. All cuts shall be flush and clean, and in accordance with the latest recommendations and techniques of the International Society of Arboriculture (ISA) and the State Division of Forest Environment.

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1. Unless otherwise specified, shade trees should be single trunked and have a single recognizable leader, where appropriate to the species and age of the tree.
2. Unless otherwise specified, all existing and proposed trees shall be free of branching to 6'-8" min above finish grade.
3. When applicable, trees shall be pruned for a minimum clearance of 18 inches around wires, in such a way as to allow wires to pass through the tree canopy rather than cropping foliage and branches

End of Section

Part 1 – General:

1.01 – Related Documents:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.02 – Description of Work:

- A. Provide all materials, equipment and labor necessary to complete the work as indicated on the drawings or as specified herein.
- B. The principal work if this section includes, but may not be limited to the following:
 - 1. Identifying Existing Utilities
 - 2. Removal of existing site improvements
 - 3. Dust Control

1.03 – Regulatory Requirements:

- A. Conform to applicable codes for disposal of debris.
- B. Conform to all environmental regulations and stipulations of any and all environmental permits, in accordance with Section 01060 of these Specifications.

Part 2 – Products:

2.01 – Calcium Chloride for Dust Control:

- A. Calcium chloride shall meet the requirements of the RIDOT Standard Specifications.
- B. Calcium chloride shall have weights marked on the shipping containers to be used, or if directed by Owner's representative, scales shall be furnished by and at the Contractor's expense to measure calcium chloride by the ton.

Part 3 – Execution:

3.01 – Identifying Existing Utilities:

- A. Contractor shall retain Dig Safe (Dial 811 or 888-DIG-SAFE) to identify all utilities. Record locations on Project Record Documents from Dig Safe field location markings.
- B. Contractor shall disconnect, remove, and cap utility lines within demolition areas that are not planned to be used.
- C. Location(s) of disconnected utilities shall be marked by the Contractor, and recorded on as-built drawings for owner.

3.02 – Selective Demolition:

- A. The Contractor shall prevent movement or settlement of adjacent structures and shall shore up, brace, underpin, and do whatever is necessary to protect adjacent structures. Damage to adjacent structures not intended to be removed, caused due to improper protection of such structures shall be repaired and/or replaced by the Contractor at their own expense.
- B. Contractor shall demolish indicated appurtenances in an orderly and careful manner so as to allow for minimal disturbance to adjacent areas.
- C. Contractor shall protect existing pavements, vegetation, appurtenances, and structures which are not denoted on plan to be demolished.
- D. Contractor shall cease operations and notify Owner's representative immediately if adjacent structures appear to be endangered. Do not resume operations until corrective measures have been taken.
- E. Except where noted otherwise, Contractor shall immediately remove demolished material from site and dispose of legally off-site.
- F. Relics, antiques, and similar objects, as indicated by the Owner's representative or as discovered or uncovered in the process of performing the Work of this Section, remain the property of the Owner. Contractor to notify Owner's representative and obtain acceptance regarding method of removal, prior to any removals.
- G. Unless otherwise directed, contractor shall remove and promptly legally dispose of contaminated, vermin infested, or dangerous materials encountered.

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- H. Contractor may not burn or bury demolished materials on site.
- I. All areas excavated as a result of demolition shall be backfilled completely by the Contractor, as soon as possible. Excavated areas shall be protected by Contractor until backfilling is completed to ensure safety to surrounding structures, personnel, and the public.
 - 1. Contractor shall rough grade and compact areas affected by demolition to maintain site grades and contours.
- J. Contractor shall remove demolished materials from site as work progresses. Project Site shall be left in clean condition.

3.03 – Removal of Existing Site Improvements:

- A. Storage Tanks: Should below-ground storage tanks be found, Contractor shall stop work immediately, and notify Owner or Owner’s Representative.
- B. Fencing (by others): All fencing and fencing fabric shall be removed by others as indicated on the drawings. Except as noted or requested by the Owner’s Representative, all footings associated with fencing shall be removed without disturbance to surrounding pavements and site amenities. All fencing and fencing fabric shall be disposed of in an off-site location, by others, in accordance with all local, state, and federal regulations.
- C. Footings, Foundations and Structures: Where indicated in the Contract Drawings, Footings, foundations, and structures shall be removed by the Contractor to a minimum depth of 18”. In certain locations, drawings may show excavation, grading operation, or other site improvements which require removal of footings and other unsuitable materials to full depth required to perform improvement work. Where footings need to be removed to 18” depth, all saw cutting or jack hammering required shall be performed at no additional cost to the owner.
- D. Curb: Contractor shall carefully remove, store, and clean any curbing specified for resetting in a manner consistent with RIDOT standards.

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3.04 – Dust Control:

- A. Contractor shall provide all equipment, labor, materials and related work necessary for the prevention and control of dust resulting from operation in the performance of the work of this contract and in accordance with additional requirements specified herein. All costs in connection therewith shall be considered to be included in the various unit and/or lump sum prices bid for the various items as listed in the bid, and shall not be borne by the Owner.
- B. When in the opinion of the Owner's representative, conditions at the site are such as to require dust control measures to supplement those required to be provided by the Contractor (and as described in the preceding paragraph) to protect the safety, health, and welfare of the surrounding community, the Owner's representative may direct the Contractor to furnish and spread dust control measures over certain areas at the site, at certain times, and at specific rates of application suitable for successful control of dust, at no additional cost to the Owner.
- C. Calcium Chloride utilized for dust control shall meet the requirements of RIDOT.

End of Section

Part 1 – General:

1.01 – Related Documents:

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of these Specifications are a part of this Section, which shall consist of all labor, equipment and materials necessary to complete all excavating, filling and grading work indicated on the Drawings, herein specified, or both.
- B. Applicable portions of Division 2 of these Specifications, including, but not necessarily limited to:
 - 1. Section 02100, “Site Clearing and Preparation”
 - 2. Section 02210, “Site Grading and Drainage”
 - 3. Section 02270, “Slope Protection and Erosion Control”

1.02 – Description of Work:

- A. Stripping of soil, other than those area designated on the contract drawings as “by others”, as herein specified or indicated on Construction Drawings.
- B. Stockpiling of surplus topsoil, other than those area designated on the contract drawings as “by others”, if any, on-site where directed by the Owner or Owner’s Representative.
- C. Excavation of all trades is included herein, including, but not necessarily limited to excavation for footings, rough grading, utility services and extensions.
- D. Providing of additional material hereinafter specified or needed for fills.
- E. Removal and Legal Disposal of excess material and that which is not useable for filling shall be by others.
- F. Backfilling of all trades.
- G. Compaction of fills of all trades as hereinafter specified.
- H. Repairs and Corrections of any major deformations caused by the removal of large boulders, sink holes, cave-in, etc., with concrete, bank run gravel or crushed stone.

1.03 – Protection and Precautionary Measurements:

- A. Carefully maintain benchmarks, monuments, and other reference points. If disturbed or destroyed, replace reference points as directed.
- B. Protect active pipes, if encountered, and notify persons owning same. If encountered, remove inactive utilities from within building lines. Plug or cap where indicated or directed.
- C. Protect persons and property from damage and discomfort caused by dust. Water as necessary, or apply other Dust Control techniques or products to quell dust.
- D. Protect trees and associated root zones of trees designated for protection

1.04 – Erosion Control:

- A. Employ satisfactory methods and operations to minimize erosion of soil during earthwork operations. Follow accepted standards of the RI Department of Environmental Management and as otherwise specified within these specifications for erosion control.

Part 2 – Elevation and Obstructions:

2.01 – General:

- A. The Contract is based upon the following: That the surface elevations are as indicated; that no pipes or other artificial obstructions, except those indicated, will be encountered.
- B. In case the actual conditions differ substantially from those stated, and/or shown, Notify the Owner’s Representative of all deviations. Should it be determined that Contract or Project Scope require adjustment or modification, the Owner and Contractor will negotiate such amendment, and shall adjust project scope and/or contract in accordance with procedures outlined in these specifications and the Unit Prices submitted with the Bid.

2.02 – Quality Assurance:

- A. Materials, methods, and compaction tests will be subject to approval of an approved Inspection Agency specified elsewhere in these specifications.

2.03 – Code and Standards:

- A. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction. The contractor is required to contact Dig-Safe 72 hours prior to start of excavation.

Part 3 – Requirements:

3.01 – Traffic:

- A. Contractor shall conduct all earthwork operations and the removal of debris to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
 - 1. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
 - 2. Provide all traffic control required throughout and due to construction procedures, or resulting conditions, and pay all costs incurred.

3.02 – Damages:

- A. Contractor shall promptly repair damages caused by operations to adjacent facilities, or facilities within project site not specified for removal, as directed by the Owner's Representative and at no additional cost.

3.03 – Existing Topsoil Removal:

- A. Before starting to excavate, Contractor shall strip and separate available topsoil, subsoil and unsuitable material to full depth from areas to be covered by pavements or other site structures, or areas where cuts or fills are to occur.
 - 1. Stripping shall be limited to small areas at a time, immediately followed by filling, to avoid unnecessary disturbance to the subgrade.
- B. Existing On-Site Topsoil shall be that material found in the upper horizon of excavated soils whose composition generally matches that defined by RIDOT M.18.01 LOAM.
- C. Contractor shall strip topsoil to whatever depths encountered, unless shown otherwise and in such manner so as to prevent intermingling with the underlying

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subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping.

- D. Contractor shall screen and stockpile topsoil in storage piles in areas shown or where otherwise indicated or approved by Owner. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent windblown dust. Protect toe of slopes of storage piles with Haybales or Silt Fence in accordance with the contract drawings and other sections of these specifications to prevent migration of sediments. Topsoil remains property of Owner, unless otherwise specified.

3.04 – General Open Earth Excavation:

- A. Contractor shall excavate as necessary for work shown or specified. Remove earth, rocks, boulders and other obstructions as herein defined.
- B. When excavating, Contractor shall allow ample space for formwork.
- C. Contractor shall leave bearing surfaces undisturbed, level, and true. Excavate to solid bearing at elevations no higher than those shown.

3.05 – Unauthorized Excavation:

- A. Unauthorized Excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Owner's Representative.
- B. If Unauthorized Excavation occurs in areas that are specified to be under footings, foundation bases, or retaining walls, Contractor shall fill unauthorized excavation by extending the indicated bottom elevation of the footing or base to the excavation bottom without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, only when acceptable to Owner's Representative.
- C. If Unauthorized Excavation occurs in areas not specified in above specification, Contractor shall backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Owner's Representative.
- D. Contractor shall complete all corrective work to Unauthorized Excavation as specified above at no expense to the Owner.

3.06 – Stability of Excavations:

- A. Contractor shall slope sides of excavations to comply with Local Codes and Ordinances having jurisdiction. Shore and brace excavations where sloping is not possible either because of space restrictions or stability of material excavated.
- B. Contractor shall maintain sides and slope of excavations in a safe condition until completion of backfilling.

3.07 – Shoring and Bracing:

- A. Contractor shall brace and shore sides of excavation as necessary to prevent danger to persons or damage to structures, injurious caving, or erosion.
- B. Materials for shoring and bracing, such as sheet piling, uprights, stringers, and crossbraces, shall be provided by Contractor in good serviceable condition.
- C. All Shoring and bracing shall comply with Local Codes and Authorities having jurisdiction.
- D. Contractor shall maintain shoring and bracing in excavation regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.
- E. Should they occur, slides and cave-ins of excavations shall be repaired by the Contractor at their own expense.
- F. Contractor shall remove shoring and bracing before backfilling.
- G. In removing shoring and bracing, Contractor shall exercise care to prevent voids. Immediately fill voids, if formed, with approved fill material at Contractor's expense.

3.08 – Water and Frost:

- A. Contractor shall keep earth under footings and slabs dry and free from frost. Should bearing surfaces be softened by water or frost, re-excavate to solid bearing and fill with concrete or gravel as directed by the Owner's Representative, and at no expense to Owner.

Part 4 – Filling:

4.01 – General:

- A. Contractor shall remove debris and organic matter before filling.
- B. Only approved materials shall be used by Contractor for fills.
- C. Unless otherwise specified or requested by the Owner's Representative, Contractor shall make fills as soon as feasible thereafter to insure maximum settlement and to avoid disturbance to the subgrade.
- D. Contractor shall not place fill on frozen ground.
- E. All material provided by Contractor shall be free from frost, roots and other vegetable matter, large rocks, rubbish, brick, and other undesirable material.
- F. Install fills in indicated thicknesses, compacted in lifts as specified herein.
- G. Fills executed by Contractor shall have neat, uniform side slopes, smoothed and graded to those excavations not required to be filled.

4.02 – Fill Materials:

- A. "Processed Gravel" in pipe trenches as roadway and sidewalk base course and other areas where indicated, shall be free from loam and other specified undesirable materials, conforming to the requirements of Table I, Column I, Section M.01.09 GRADATION OF AGGREGATES, RI Department of Transportation Standard Specifications for Road and Bridge Construction, as amended.

On-site material may be used under building areas only after satisfactory test data has been submitted and only with the approval of the Owner's Representative.

- B. "Bank Run Gravel" and/or "Gravel Borrow" under building slabs, in pipe trenches, around manholes and catch basins, against damp-proofed foundation walls, where indicated as "gravel fill", and where else shown, shall be free from loam and other specified undesirable material, and conforming to the requirements of Table I, Column I, Section M.01.09 GRADATION OF AGGREGATES, RI Department of Transportation Standard Specifications for Road and Bridge Construction, as amended.

On-site material may be used under building areas only after satisfactory test data has been submitted and only with the approval of the Owner's Representative.

- C. "Stone Fines" consisting of clean, inert, hard, durable grains of quartz or other hard durable rock; free from loam or clay, surface coatings and deleterious material; and conforming to the following analysis:

Sieve Size	% Passing
#8	100
#50	25-40
#100	0-10
#200	0-5

- D. "Washed Crushed Stone" consisting of clean, inert, hard, durable grains of quartz or other hard durable rock; free from loam or clay, surface coatings and deleterious material; and having an aggregate size no greater than 3/4" and no less than 1/2".
- E. "Bedding", unless otherwise specified by the Owner's Representative, shall be as defined by ASTM D2321, Class I, II, or III and installed as required in ASTM D2321.
- F. "Riprap" for use to mitigate erosion shall conform to the requirements of RIDOT M.10.03.

Part 5 – Compaction:

5.01 – General:

- A. Contractor shall place fill in horizontal layers, beginning with the lowest areas and building up until the entire area to be filled is at a uniform elevation.
1. Compact each layer with an approved vibratory device to achieve minimum density requirements prior to placement of successive layer.
 2. Continue compaction of each layer until there is no evidence of weaving or creeping. Compact places inaccessible to large equipment with approved mechanical tampers, as well as around the perimeter of foundations, walls and around column pedestals and footings.
 3. Earth in cut sections for paved areas shall be excavated to subgrade. The resulting surface of the cut shall be compacted as required, to not less than ninety five percent (95%) of maximum density.

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- B. Subgrade or Fill Material: Unless otherwise specified, Contractor shall compact to ninety percent (95%) of maximum density in a maximum depth of twelve (12) inch loose layers, except for two (2) layers a maximum depth of six (6) inch loose layers directly over pipes.
- C. Compacted Gravel Base Material: Unless otherwise specified, Contractor shall compact to ninety percent (95%) of maximum density in three (3) inch loose layers.
- D. Attention is directed to the grain size characteristics of the material and necessity for the difficulty of controlling and maintaining optimum moisture content during compaction. Material in each layer shall contain optimum moisture for maximum density compaction and the optimum moisture content shall be uniformly distributed throughout the layer. Harrowing or other working of the material may be required to produce uniformity and control of the water content.
- E. Contractor shall slope the surface of each layer a minimum of one percent (1%) plus or minus, at the conclusion of each day's work to provide surface drainage.
- F. Whenever in-place densities are below minimum acceptable limits, as determined by AASHTO T-191 or AASHTO T-205, additional compaction will be required of the Contractor to produce the specified densities, without additional cost to the Owner. When greater densities than the minimum specified are required by the Owner's Representative, the work will be subject to Contract Unit Prices.
- G. When requested by the Owner's Representative, the Owner will retain a laboratory approved by the Owner's Representative to supervise and control the construction of the fill. This laboratory shall perform tests in accordance with AASHTO T-180 on the materials the Contractor proposed to use to establish the compacted dry weight at optimum moisture. Results of these tests shall be submitted to the Owner's Representative for approval and work may start only after the Owner's Representative approves the test results.
- H. If required, the Owner's Representative or approved testing laboratory under the direction of the Owner's Representative shall provide continuous inspection of compacted fills.
- I. Backfilling material shall conform to laboratory requirements herein specified and shall be soil obtained from approved sources.
- J. The area to be filled shall be cleared of all loose material and inspected by Contractor to ensure area is suitable to receive fill. If area to be filled fails following filling

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operations, due to unsuitable nature of area to be filled, Contractor shall repair or replace fills as needed at no expense to the Owner.

- K. Fill material shall be free from frost and shall not be placed on frozen ground. Fill shall be deposited by Contractor in layers of such thickness as required by its nature or as directed, but the uncompacted thickness of each layer shall not exceed (12) inches. Each layer shall be separately compacted to a uniform solid mass by use of vibratory compactors or other approved equipment. Fill shall be placed in horizontal layers, beginning with the lowest areas and building up until the entire area to be filled is at a uniform elevation. The Contractor shall control the moisture content of the fill material, as directed by the laboratory to insure maximum density by either the addition of water, or by harrowing and working prior to compacting. Each layer shall be free of ruts and shall meet compaction requirements before a succeeding layer is placed. Compaction of each layer shall continue until no weaving or creeping takes place.
- L. Backfill in areas excavated after construction of the fill shall be constructed in layers whose loose thickness shall not exceed six (6) inches, which shall be thoroughly compacted with approved hand equipment to the density herein before specified prior to placement of successive layers.
- M. Field tests of moisture content prior to compaction and dry weight after compaction shall be made by the contractor or approved laboratory to assure thorough and uniform compaction. Testing shall be performed on the layer immediately below the layer just compacted.
- N. At least four (4) tests of moisture content shall be made each day by the Contractor of approved laboratory. Additional tests shall be made if material or moisture conditions change.

Part 6 – Rough Grading:

6.01 – General:

- A. Contractor shall grade entire area of property to reasonable true and even surfaces, thoroughly compacted to indicated elevations.
- B. Unless otherwise specified, Contractor to slope ground away from paved surfaces to facilitate drainage.
- C. Contractor shall grade to uniform levels or slopes between points where grades are noted or specified.

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- D. At abrupt changes in grade levels, Contractor shall round surfaces to ease transitions.
- E. Should as-built or on-site figures conflict with noted contours, consult Owner's Representative.

6.02 – Levels:

- A. Contractor shall grade paving, walks and other surface areas to subgrade.
- B. Contractor shall grade lawn areas to four (4) inches below finish grades.
- C. Contractor shall grade landscape beds to three (3) inches below finish grades.

End of Section

SITE GRADING AND DRAINAGE

Section 02210

Part 1 – General:

1.01 – Related Documents:

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of the Specifications are a part of this Section, which shall consist of trimming and grading of all shoulders, side slopes, sidewalks and subgrade whether in excavation or embankment, and the work shall be performed in a neat and workmanlike manner, to the lines and grades of the Typical Sections shown on the Plans and as the Owner's Representative may direct.

- B. This item shall also include the grading and compaction of the subgrade upon which the sidewalks, pavements, and topsoils shall rest, to the lines and grades of the Plans and as the Owner's Representative may direct.

1.2 – Related Sections:

- A. Section 02200 "Earthwork"

Part 2 – Materials: Not Used

Part 3 – Construction Methods:

- A. The areas to be graded shall have all unsatisfactory material removed and shall then be rolled by Contractor as directed to a tolerance of one (1) inch plus or minus, provided that this one (1) inch above and below grade is not maintained for a distance longer than one hundred (100) feet. Any depressions which may occur during the rolling shall then be filled with additional suitable material and the surface then regraded and rolled until true to the lines and grades as required.

- B. All slopes shall be graded and finished by Contractor to conform with the lines and grades indicated on the Plans and as directed to the tolerance of two (2) inches plus or minus.

- C. Areas to be loamed shall be trimmed and graded to the lines and grades as indicated on the Plans or as directed, before any loam is placed.

End of Section

SLOPE PROTECTION AND EROSION CONTROL

Section 02270

PART 1 – General:

1.01 – Related Documents:

- A. Drawing and General Provisions of Contract, including General Conditions and Supplementary Conditions and Division 1 Specification Sections apply to work in this Section.

1.02 – Description of Work:

- A. Furnish and install temporary slope protection and erosion control measures as needed during the progress of the work or as ordered by the Owner’s Representative during the life of the Contract to control water pollution through use of Compost Silt Socks, Baled Hay Checks, Silt Fence, and other erosion control devices and methods.

1.03 – Related Sections:

- A. Section 01060 “Regulatory Requirements”
- B. Section 02100 “Site Clearing and Preparation”

Part 2 – Products:

2.01 – Materials:

- A. Compost Silt Sock: Shall be 8” Diameter filter fabric sock filled with inert, organic recycled wood chips or compost, free of seed and low in moisture content, as available through “Silt Sock Erosion Control Products”, or approved equal.
- B. Straw Wattle: Wattles shall be biodegradable woven mesh netting (12” Dia x 6’-20’ in Length), filled with straw or hay and seed mix (where specified).
- C. Haybales: Haybales shall be mowings of acceptable herbaceous growth reasonably free from noxious weeds or woody stems and shall be reasonably dry. Haybales shall be approximately 36” long x 18” wide x 24” high. Bales shall be anchored with 1” x 1” x 3’ long wooden stakes.
- D. Silt Fence: Shall be a synthetic non-degradable fabric capable of trapping and holding accumulations of water born siltation. Silt fence shall be mounted on wood stakes, and shall be no less than 30” high.

SLOPE PROTECTION AND EROSION CONTROL

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Part 3 – Execution:

3.01 – Preparation:

- A. If overland water flow becomes a problem in the construction progress, then Contractor shall take it upon himself to construct any and all erosion or siltation control measures, as necessary, to alleviate an erosion or siltation problem which may affect progress of work. This work shall be performed at no additional expense to the Owner.
- B. Should erosion and siltation occur, the Contractor will be required to repair and/or clean the damaged work as part of the base bid of this project.
- C. Contractor shall have on-site all necessary slope protection and erosion control devices and materials prior to undertaking any work that may cause erosion or siltation.

3.02 – Special Instructions:

- A. All erosion control devices shall be installed in accordance with manufacturer's specifications, industry standards for erosion control, and as illustrated on the Contract Drawings.
- B. In the event that temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install controls as a part of the work as scheduled, and are ordered by the Owner's Representative, such work shall be performed by the Contractor at his own expense.
- C. It is the Contractor's responsibility to install and acceptably maintain erosion control measures throughout the duration of the project. Installation of erosion control measures shall be completed as illustrated on the contract drawings, in accordance with RIDOT Standard Specifications where applicable, and any manufacturer's specific installation instructions.
- D. In case of repeated failures on the part of the Contractor to control erosion, pollution and/or siltation, the Owner's Representative reserves the right to employ outside assistance or to use his own forces to provide the necessary corrective measures. Such incurred direct cost plus project engineering costs will be charged to the Contractor and appropriate deductions made from the Contractor's monthly progress payment.

SLOPE PROTECTION AND EROSION CONTROL

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- E. Any erosion, siltation or general damage resulting from neglect by the Contractor to undertake erosion control measures as required or directed shall result in the responsibility of the Contractor to correct the areas as determined by Owner's Representative.

- F. Any requirements stipulated by environmental regulators arising from the contractor's negligence in properly maintaining erosion and sedimentation control measures shall be conducted by the contractor at no additional cost to the Owner.

3.03 – Removal and Final Cleanup:

- A. Upon complete stabilization of soils against erosion, remove sediment control devices and all accumulated silt. Dispose of silt and waste materials in proper manner.

End of Section

BITUMINOUS CONCRETE SURFACING

Section 02600

Part 1 – General:

1.01 – Section Includes:

- A. New Bituminous Concrete Pavement Installation
- B. Repair of Bituminous Concrete Pavement
- C. Bituminous Concrete Sealcoating

1.02 – Related Documents:

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of these Specifications are a part of this Section, which shall consist of all labor, equipment and materials necessary to complete all Bituminous Concrete Surfacing work indicated on the Drawings, herein specified, or both.
- B. Applicable portions of these Specifications, including, but not necessarily limited to:
 - Section 01340 “Shop Drawings, Product Data and Samples”
 - Section 01410 “Testing Laboratory”
 - Section 02100 “Site Clearing and Preparation”
 - Section 02200 “Earthwork”
 - Section 02620 “Curbing”
 - Section 03300 “Site Concrete Work”

1.03 – Submittals:

- A. Contractor shall submit product data under provisions of Section 01340 of these Specifications.

1.04 – Tests:

- A. Contractor shall perform Testing and analysis of asphaltic mix under provisions of Section 01410 of these Specifications.
- B. Contractor shall submit proposed mix design of each class of mix for review prior to commencement of work.
- C. Testing organization will take samples and perform tests in accordance with RIDOT Standard Specifications.

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1.05 – Quality Assurance:

- A. Contractor shall perform work in accordance with Part 200 and Sections 401 through 410 of the RIDOT Standards Specification for Road and Bridge Construction.
 - 1. Delete subsections referencing “Methods of Measurement” and “Basis of Payment”.
- B. Contractor shall obtain materials from same source throughout.

1.06 – Regulatory Requirements:

- A. All work shall conform to applicable local, state, and federal standards for paving work on public property.
- B. All work shall conform to all requirements of environmental permitting, including those outlined in Section 01060 of these Specifications.

1.07 – Environmental Requirements:

- A. Do not place asphalt when base surface temperature is less than 40 degrees F.

Part 2 – Products:

2.01 – Bituminous Concrete Paving:

- A. Bituminous Concrete Binder Course: Where specified on Contract Drawings, bituminous binder course shall conform with Section M.03.01 Column “Binder Course”, Section M.03.02, and M.03.03 of the RIDOT Standard Specifications.
- B. Bituminous Concrete Sport Surface Course: Bituminous surface course shall be Type I-2 Bituminous Concrete Pavement and shall conform with Section M.03.01, Column “Class I-2”, Section M.03.02, and Section M.03.03 of the RIDOT Standard Specifications.
- C. Bituminous Concrete Pedestrian (Sidewalk) Surface: Bituminous Concrete Pedestrian (Sidewalk) Surface shall be Type I-2 Bituminous Concrete Pavement and shall conform with Section M. 03.01, Column “Class I-2”, Section M.03.02, and Section M.03.03 of the RIDOT Standard Specifications.

BITUMINOUS CONCRETE SURFACING

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2.02 – Patch Binder Mix:

- A. Core Patch Binder Mix: “Novabond” acrylic polymer emulsion (as manufactured by NOVA Sports USA, or approved equal), mixed with Portland Cement and Sand, in accordance with manufacturer’s specifications, to create Patch Binder Mix.

2.03 – Acrylic Patching Compound:

- A. “Novabond” acrylic polymer emulsion (as manufactured by NOVA Sports USA, or approved equal), mixed with Portland Cement and Sand, in accordance with manufacturer’s specifications, to create leveling slurry.

2.04 – Poured Joint Seal Material:

- A. Asphalt Rubber Compound, hot poured type, conforming to the requirements of AASHTO M173 and in accordance with Section 408 of the RIDOT Standard Specifications.

2.05 – Backer Rod:

- A. Expanded closed cell polyethylene foam capable of withstanding the temperature of hot poured joint seal, with a diameter 150 percent the width of the joint opening in accordance with RIDOT Standard Specifications.

2.06 – Bituminous Seal Coating:

- A. “MasterSeal” Coal Tar Bituminous Concrete Seal Coating as manufactured by SealMaster, or approved equal (Tel: 1-800-395-7325, www.sealmaster.net).

Part 3 – Execution:

3.01 – Existing Bituminous Concrete Repair:

- A. All Existing Bituminous Concrete surfaces to be repaired shall be cleaned thoroughly, using high-powered air blowers and/or power brooms.
- B. Route and Clean out all cracks to greatest extent possible to remove debris, sand, dust, and organic matter.
- C. Surficial Cracks (non-working (less than 1/4" horizontal movement annually) surface cracks greater than 1/10", but less than 1/4" width): Fill Cracks with processed gravel to within 1/4" of pavement surface (or as specified by manufacturer of Patch Binder mix).

BITUMINOUS CONCRETE SURFACING

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Mix Patch Binder Mix (Acrylic Polymer Emulsion, mixed with Portland Cement and Sand) in accordance with manufacturer's specifications.

Prime area to be filled prior to application of patch binder mix, in accordance with patch binder mix manufacturer's specifications.

Apply Patch Binder Mix to crack in accordance with manufacturer's specifications, and trowel smooth to surface of adjacent bituminous concrete.

D. Structural Crack Repair (Full Depth and/or Working Cracks (¼" or more of horizontal movement annually):

1. Prepare and install poured joint seal material in accordance with section 408 of the RIDOT Standard Specifications
2. If Cracks are over 2" in depth, install backer rod, sized accordingly, to ensure maximum sealer depth of 1".

E. Low Spot Repair:

1. Allow any new Bituminous Concrete to Cure for a Minimum of 14 days.
2. Flood area with water and allow to dry while observing where water ponds.
3. Thoroughly clean surface free of all grease, oil, dirt, and any other foreign matter by washing with a high pressure water hose or blow clean with an air broom. Remove any grease or oil with an oil and grease emulsifier and then flush thoroughly with water.
4. Install acrylic patching compound in accordance with manufacturer's specifications to eliminate ponding conditions.

3.02 – Inspection for New Surfacing:

- A. Contractor shall verify that compacted subgrade is dry and ready to support paving and imposed loads.
- B. Contractor shall verify gradients and elevations of base are correct.
- C. Beginning of installation by Contractor means Contractor's acceptance of substrate.

3.02 – Preparation for New Surfacing:

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- A. Contractor to do all necessary regrading to bring subgrades to the required grades and sections including compaction.
- B. All soft and yielding materials and other portions of the subgrade which will not compact readily when rolled or tamped, shall be removed by Contractor as directed and all loose rock or boulders found in the subgrade shall be removed or broken off to a depth of not less than six inches below subgrade.
- C. All holes or depressions made by the removal of materials as described shall be filled by Contractor with suitable material and the whole surface compacted uniformly.
- D. Any portion of the subgrade, which is not accessible to a vibratory compacting roller or tamper, shall be compacted thoroughly by the Contractor with hand tampers, weighing not less than fifty (50) pounds. The face of the tamper shall not exceed 100 square inches in area.
- E. Gravel base material shall be placed by Contractor and spread uniformly by means of approved spreaders, roadscrapers, or by other methods satisfactory to the Owner's Representative. Stones larger than 3" or 1/2 of the depth of the course shall be removed. Care shall be taken not to allow segregation of the remaining larger stones in the course, and if this becomes apparent, the material shall be separated and spread by means of rakes, forks and shovels.
- F. Contractor shall fill any depressions that appear during or after the rolling with gravel and re-roll until the surface is true and even. Compact inaccessible areas with a small mechanical or hand tamper.
- G. If the gravel does not contain a sufficient amount of moisture to insure its firm and adequate compaction and shaping, water shall be added by the Contractor in sufficient amount to obtain the desired result.
- H. Coat surfaces of manhole and catch basin frames with oil to prevent bond with asphalt paving.

3.03 – Placing Bituminous Pavement:

- A. Contractor shall place binder course of pavement within 24 hours of priming base surfaces.
- B. Contractor shall place each course of pavement to compacted thicknesses identified in the plans.

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- C. Contractor shall place surface course within two hours of placing binder course.
 - 1. If surface course requires placement after the two-hour timeframe outlined above due to site conditions, timing, weather, or similar acceptable cause, the binder course shall be thoroughly cleaned and treated with an asphaltic tack-coat in accordance with RIDOT standards prior to installation of surface course. Costs associated with any additional work completed by the Contractor to ensure proper adhesion of surface course to binder course shall be borne by the Contractor.
- D. Contractor shall hand compact bituminous concrete surfacing in areas inaccessible to rolling or other mechanical equipment.
- E. Bituminous Paver:
 - 1. The bituminous paver shall be self-contained, power-propelled unit, provided with an activated screed or strike-off assembly, heated if necessary, and capable of spreading and finishing courses of bituminous plant mix material in widths applicable to the specified typical section and thicknesses shown on the Plans.
 - 2. The paver shall be equipped with a receiving hopper having sufficient capacity for a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed.
 - 3. The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving or gouging the mixture.
 - 4. When laying mixtures, the paver shall be capable of being operated at forward speeds consistent with satisfactory laying of the mixture.

3.04 – Tolerances:

- A. Flatness: Maximum variation of 1/4 inch measured with 10-foot straight edge.
- B. Compacted Scheduled Thickness: Within 1/3 inch of design thickness.
- C. Variation from true elevation: Within 1/4 inch.

BITUMINOUS CONCRETE SURFACING

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Part 4 – Cutting and Matching Bituminous Pavement:

4.01 – Description:

- A. This item shall consist of cutting back and matching cuts in pavement to the full specified depth of the course or courses. In removing existing pavement, surface course or base course, or combination thereof, the sections to be removed shall be cut to the neat lines shown on the Plans or as directed, and any existing pavement, surface course, or base course or combination thereof, beyond the neat lines so established, which is damaged, injured or destroyed by the Contractor's completion of this work shall be replaced by the Contractor without additional compensation.

- B. Where new bituminous concrete patch abuts existing pavement, apply asphalt emulsion tack coat to vertical surfaces of all abutting pavement to ensure proper adhesion of new bituminous concrete patch to existing pavement in accordance with RIDOT Standard Specifications.

End of Section

Part 1 – General:

1.01 – Section Includes:

- A. Setting of RIDOT Granite Curbs
- B. Re-setting of existing Concrete Curbs
- C. Setting of RIDOT Concrete Curbs

1.02 – Related Documents:

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of these Specifications are a part of this Section, which shall consist of all labor, equipment and materials necessary to complete all Curbing work indicated on the Drawings, herein specified, or both.
- B. Applicable portions of these Specifications, including, but not necessarily limited to:
 - Section 01340 “Shop Drawings, Product Data and Samples”
 - Section 01410 “Testing Laboratory”
 - Section 02100 “Site Clearing and Preparation”
 - Section 02200 “Earthwork”
 - Section 02600 “Bituminous Concrete Surfacing”
 - Section 03300 “Site Concrete Work”

1.03 – References:

- A. Contractor shall comply with the provisions of Section 906 - Curbing for Roadways, *Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition*, as amended by the RIDOT.

1.04 – Submittals:

- A. Contractor shall submit Product Data and Materials List under provisions of Section 01340 of these Specifications.

1.05 – Quality Assurance:

- A. Contractor shall comply with the provisions of Section 906 - Curbing for Roadways of the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, as amended.

CURBING

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1. Delete Section 906.04 Method of Measurement
2. Delete Section 906.05 Basis of Payment

Part 2 – Products:

2.01 – Granite Curb:

- A. Granite Curbs, Apron Stones, Radius Corners, and Transition Curbs shall conform to Section 906 of the RIDOT Standard Specifications for Road and Bridge Construction, as amended.
 1. Delete subsections referencing “Methods of Measurement” and “Basis of Payment”.
- B. Granite Curbs shall be in accordance with RIDOT Standard Detail #'s 7.3.0, 7.3.1, 7.3.2, 7.3.3, and 7.3.4.

2.02 – Concrete Curb:

- A. Concrete Curb, Apron Stones, Radius Corners, and Transition Curbs shall conform to RIDOT Specification concrete Class Z(AE), and Section 601, Portland Cement Concrete, of the RIDOT Standard Specifications for Road and Bridge Construction, as amended.
 1. Delete subsections referencing “Methods of Measurement” and “Basis of Payment”.
- B. Concrete Curbs shall conform to Section 906 of the RIDOT Standard Specifications for Road and Bridge Construction, as amended.
 1. Delete subsections referencing “Methods of Measurement” and “Basis of Payment”.
- C. Concrete Curbs shall be in accordance with RIDOT Standard Detail #'s 7.1.0, 7.1.1, 7.1.2, 7.1.3, and 7.1.4.

Part 3 – Execution:

3.01 – Inspection:

- A. Contractor shall verify that subgrade is ready to receive installation of curb work.

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- B. Beginning curb installation work means Contractor's acceptance of subgrade.

3.02 – Installation:

- A. All Curb Installation shall be as per applicable subsection of Section 906.03 of the RIDOT Standard Specifications.

End of Section

CHAIN LINK FENCING

Section 02711

Part 1 – General:

1.01 – Section Includes:

- A. Fencing framework, fabric and accessories.
- B. Excavation and concrete work for installation of new and reset existing posts.
- C. Installation of new and resetting of stockpiled fencing.

1.02 – Related Documents:

- A. The General Conditions, Supplementary Conditions and applicable portions of Division 1 of these Specifications are a part of this Section, which shall consist of all labor, equipment and materials necessary to complete all Chain Link Fencing work indicated on the Drawings, herein specified, or both.
- B. Applicable portions of these Specifications, including, but not necessarily limited to:
 - Section 01340 “Shop Drawings, Product Data and Samples”
 - Section 01410 “Testing Laboratory”
 - Section 02100 “Site Clearing and Preparation”
 - Section 02200 “Earthwork”
 - Section 03300 “Site Concrete Work”

1.03 – References:

- A. Contractor shall comply with the standards of American Society for Testing and Materials (ASTM) Standards, ASTM F567.
- B. Contractor shall comply with the provisions of Section 903 - Fences, *Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition*, as amended by the RIDOT.

1.04 – Quality Assurance:

- A. Manufacturer: Company specializing in commercial quality chain link fencing with a minimum of ten (10) years of experience.
- B. Installer: Company specializing in commercial quality chain link fencing with a minimum of ten (10) years of experience.

CHAIN LINK FENCING

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- C. Installation: In accordance with ASTM F567 Installation of Chain Link Fence, and RIDOT standard specifications, Section 903. Installation shall be the highest industrial standards for public recreation use.

1.05 – Submittals:

- A. Contractor shall submit Manufacturer's Certification that the material was produced in accordance with the applicable ASTM Standards as specified for all materials provided.
- B. Contractor shall submit sample of finished material used for fence posts, gate frames, braces, rails, stretcher bars, truss rods, tension wire, and hardware.
- C. Submit sample of finished fence fabric.

Part 2 – Products:

2.01 – Materials (General):

- A. Posts, gate frames, braces, rails, stretcher bars, truss rods and tension wire shall be of galvanized steel. Gate hinges, supporting arms, stretcher bar bands, shall be of galvanized steel or equal except that rail ends, ties and clips may be of aluminum.
- B. Posts, Caps, and Framework: ASTM F1083; Schedule 40, Galvanized heavy wall steel pipe, standard weight, one piece without joints. They shall be sized as shown on contract drawings and in compliance with ASTM F567. They shall be coated in extruded and bonded black polyvinyl chloride (PVC) in accordance with manufacturer's specifications, and AASHTO M181.
- C. Chain Link Fabric shall be 2" mesh, 9 gauge galvanized core wire coated in extruded and bonded black polyvinyl chloride (PVC) in accordance with manufacturer's specifications, and AASHTO M181.

2.02 – Post Tops:

- A. Post tops shall consist of ornamental tops. When so required, or when a top rail is to be provided, the top shall be provided with a hole suitable for the thorough passage of the top rail. The post tops shall fit over the outside of posts and shall exclude moisture from posts. Post tops shall be cast steel, hot dipped, galvanized, set screw retained.

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2.03 – Rails:

- A. Top, center and bottom rails shall be ASTM F1083; Schedule 40, Galvanized heavy wall steel pipe, standard weight, one piece without joints. They shall be sized as shown on contract drawings and in compliance with ASTM F567.
- B. Rails shall be in lengths not less than eighteen (18) feet and shall be fitted with couplings for connecting the lengths into a continuous run. The couplings shall not be less than six (6) inches long with .070 minimum wall thickness, and shall allow for expansion and contraction of the rail. Suitable ties or clips shall be provided in sufficient number for attaching the fabric securely to the top rail at intervals not exceeding twenty-four (24) inches. Means shall be provided for attaching the rails to each gate, corner, pull and end post.

2.04 – Tension Bars:

- A. Tension bars shall not be less than 3/16 by 3/4 inch and not less than two (2) inches shorter than the normal height of the fabric with which they are to be used. One (1) tension bar shall be provided for each end and gate post, and two (2) for each corner, pull post, and end post.
- B. Tension bars shall be sized appropriately as per manufacturer's recommended tension bar for the chain link fabric used on each portion of fence.

2.05 – Ties or Clips:

- A. Aluminum 6 gauge ties or clips of adequate strength shall be provided in sufficient number for attaching the fabric to all line posts at intervals not exceeding fifteen (15) inches; and not exceeding twenty four (24) inches when attaching fabric to top rail or tension wire.

2.06 – Bands or Clips:

- A. Bands and fittings of galvanized steel per ASTM F-626 shall be provided in sufficient number for attaching the fabric and stretcher bars to all terminal posts at intervals not exceeding twelve (12) inches. Tension bands shall be formed from beveled steel and shall have a minimum thickness after galvanizing of 0.078 inch; and minimum width of 3/4 inch for posts 4" O.D. or less; and 0.108 inch thickness by 7/8 inch for posts larger than 4" O.D. Brace bands shall be formed from beveled steel and shall have a minimum thickness of 0.108 inch after galvanizing; and minimum width of 3/4 inch for posts 4" O.D. or less standard mill tolerances of +/- 0.005 inch on thickness and .010 on width shall apply- attachment bolts shall be 5/16" x 1-1/4" galvanized carriage bolts with nuts.

CHAIN LINK FENCING

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Part 3 – Execution:

3.01 – New Fence Installation (Including All Posts, Rails, Hardware, And Fabric):

- A. Contractor shall install all fencing and accessories in accordance with ASTM F567, and Section 903 of the RIDOT Standard Specifications.
- B. Contractor shall provide dimensions as indicated.
- C. Contractor shall space line posts at indicated intervals.
- D. Excavation: Contractor shall provide excavation as necessary to receive footings and backfill as specified on Drawings for all fence and gate posts. Tamp bottom of all post holes prior to installation of posts and concrete footings.
- E. Setting Posts:
 - 1. Contractor shall remove any and all loose and foreign materials from sides and bottom of holes and moisten soil prior to placing concrete.
 - 2. Contractor shall center and align posts.
 - 3. Contractor shall place concrete around posts in a continuous pour and vibrate or tap for consolidation.
 - 4. During placement, Contractor shall check each post for vertical and top alignment and hold them in position.
 - 5. Contractor shall trowel tops of footings and slope or dome to direct water away from posts at a minimum slope of 1:25.
 - 6. Contractor shall keep exposed concrete surfaces moist for at least seven (7) days after placement.
- F. Concrete Strength:
 - 1. Contractor shall allow concrete to attain at least seventy five percent (75%) of its minimum twenty eight (28) day strength before rails, tension wire and fabric are installed. Contractor shall not in any case, install such items in less than seven (7) days following placement of concrete.

CHAIN LINK FENCING

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2. Contractor shall not stretch and tension fabric and wire until concrete has attained its full design strength.
- G. Where indicated, Contractor shall provide top rail through line post tops and splice with six (6) inch long rail sleeves.
- H. Contractor shall stretch fabric between terminal angle and corner posts. Install one (1) tension bar at each terminal and gate post and two (2) at each corner angle and pull post.

Contractor to use appropriate manufacturer recommended tension bars for the chain link fabric used on each portion of fence.

3.02 – Resetting of Stockpiled Fencing (Including All Posts, Rails, Hardware, And Fabric):

- A. Contractor shall install all fencing and accessories in accordance with ASTM F567, and Section 903 of the RIDOT Standard Specifications.
- B. Contractor shall provide dimensions as indicated.
- C. Contractor shall space line posts at indicated intervals.
- D. Excavation: Contractor shall provide excavation as necessary to receive footings and backfill as specified on Drawings for all fence and gate posts. Tamp bottom of all post holes prior to installation of posts and concrete footings.
- E. Setting Posts:
 1. Contractor shall remove any and all loose and foreign materials from sides and bottom of holes and moisten soil prior to placing concrete.
 2. Contractor shall center and align posts.
 3. Contractor shall place concrete around posts in a continuous pour and vibrate or tap for consolidation.
 4. During placement, Contractor shall check each post for vertical and top alignment and hold them in position.
 5. Contractor shall trowel tops of footings and slope or dome to direct water away from posts at a minimum slope of 1:25.

CHAIN LINK FENCING

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6. Contractor shall keep exposed concrete surfaces moist for at least seven (7) days after placement.

F. Concrete Strength:

1. Contractor shall allow concrete to attain at least seventy five percent (75%) of its minimum twenty eight (28) day strength before rails, tension wire and fabric are installed. Contractor shall not in any case, install such items in less than seven (7) days following placement of concrete.
 2. Contractor shall not stretch and tension fabric and wire until concrete has attained its full design strength.
- G. Contractor shall stretch fabric between terminal angle and corner posts. Install one (1) tension bar at each terminal post and two (2) at each corner angle and pull post.

Contractor to use appropriate manufacturer recommended tension bars for the chain link fabric used on each portion of fence.

End of Section

SITE CONCRETE WORK

Section 03300

Part 1 – General:

1.01 – Related Documents:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions, Special Conditions, and related parts of the Technical Specifications apply to the work of this section.
- B. Applicable portions of these Specifications, including, but not necessarily limited to:
 - Section 01410 “Testing Laboratory”
 - Section 02100 “Site Clearing and Preparation”
 - Section 02200 “Earthwork”
 - Section 02210 “Site Grading & Drainage”

1.02 – Description of Work:

- A. Concrete slab walk surfaces
- B. All Non-Structural Load Bearing Concrete footings

1.03 – Quality Assurance:

- A. Codes and Standards: Comply with provisions all local, state, and federal codes, and the requirements of the RIDOT Standard Specifications.
- B. Materials and installed work may require testing and retesting, as directed by Owner’s Representative at any time during progress of work. Allow free access to material stockpiles and facilities. Tests, not specifically indicated to be done at Owner’s expense, including retesting of rejected materials and installed work, shall be done at Contractor’s expense.

1.04 – Submittals:

- A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, curing compounds and others as requested by the Owner’s Representative.

SITE CONCRETE WORK

Section 03300

Part 2 – Products:

2.01 – Form Materials:

- A. Forms for Unexposed Finish Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
- B. Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

2.02 – Caulking:

- A. Provide self-leveling caulk over felt expansion material. Color to match concrete.

2.03 – Concrete Materials:

- A. Portland Cement: ASTM-C 150, Type I, unless otherwise acceptable to Owner's Representative.
- B. Use one brand of cement throughout project.
- C. Normal Weight Aggregates: ASTM C 33, and as herein specified. Provide aggregates from a single source for exposed concrete.
- D. For exterior surfaces, do not use fine or coarse aggregates containing appalling-causing deleterious substances.
- E. Water: Clean, Fresh, Potable Water.
- F. Air-Entraining Admixture: ASTM C 260.
- G. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to the following:
 - 1. "Sika Top" – additive for rubbed finish, manufactured by Sika Corp., or approved equal.
- H. Calcium chloride not permitted.

SITE CONCRETE WORK

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2.04 – Proportioning and Design of Mix:

- A. Prepare design mix for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 301.
- B. Design mixes to provide normal weight concrete with 4000psi 28-day compressive strength, and other properties as indicated on drawings and schedules.
- C. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, at no additional cost to Owner and as accepted by Owner's Representative. Laboratory test data for revised mix design and strength results must be submitted to and accepted by owner's Representative before using in work.
- D. Admixtures: Use air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-retraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having air content with a tolerance of plus or minus 1-1/2% within following limits:
 - 1. Concrete structures and slabs exposed to freezing and thawing, deicer chemicals or subjected to hydraulic pressure:
 - 4.5% (moderate exposure): 5.5% (severe exposure) 1-1/2" max. aggregate
 - 4.5% (moderate exposure): 6.0% (severe exposure) 1" max. aggregate.
 - 5.0% (moderate exposure): 6.0% (severe exposure) 3/4" max. aggregate.
 - 5.5% (moderate exposure): 7.0% (severe exposure) 1/2/2 max. aggregate.
 - 2. Other Concrete: 2% to 4% air.
- E. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement as follows:
 - 1. Ramps and sloping surfaces: Not more than 3".
 - 2. Reinforced foundation systems: Not less than 1" and not more than 3".
 - 3. Other concrete: Not more than 4"

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2.05 – Concrete Mixes:

- A. Ready-Mix Concrete: comply with requirements of ASTM C 94, and as herein specified.
- B. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C 94 may be required.
- C. When air temperature is between 85 degrees F (30 degrees C) and 90 degrees F (32 degrees C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 degrees F (32 degrees C), reduce mixing and delivery time to 60 minutes.

Part 3 – Execution:

3.01 – Forms:

- A. Design, erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.
- B. Design formwork to be readily removable without impact, shock or damage to cast-in-place concrete surfaces and adjacent materials.
- C. Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished moldings, rustications, reglets, chamfers blocking, screeds, bulkheads, anchorages, and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joint to prevent leakage of cement paste.
- D. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, recesses, and the like, to prevent swelling and for easy removal.
- E. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete.

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Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary opening on forms at inconspicuous locations.

- F. Chamfer exposed corners and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- G. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.
- H. Unless otherwise indicated, provide ties so portion remaining within concrete after removal is at least 1" diameter in concrete surface.
- I. Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.
- J. Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt and other debris just before concrete is placed. Retighten forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

3.02 – Installation of Embedded Items:

- A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.
- B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface.

3.03 – Preparation of Form Surfaces:

- A. Clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition.
- B. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

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- C. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.
- D. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel formwork is not acceptable.

3.04 – Concrete Placement:

- A. Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.
- B. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.
- C. General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified.
- D. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.
- E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to void inclined construction joints. When placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- F. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.
- G. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into concrete that has begun to set. At each insertion limit duration of vibration to time

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necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

- H. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of the panel or section is completed.
- I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
- J. Bring slab surfaces to correct level with straightedge and strike-off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
- K. Maintain reinforcing in proper position during concrete placement operations.
- L. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.
- M. When air temperature has fallen to or is expected to fall below 40 degrees F (4 degrees C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 degrees F (10 degrees C), and not more than 80 degrees F (27 degrees C) at point of placement.
- N. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
- O. Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.
- P. Hot Weather Placing: when hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
- Q. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90 degrees F (32 degrees C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is contractor's option.

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- R. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
- S. Fog spray forms, reinforcing steel and subgrade just before concrete is placed.

3.05 – Finish of Formed Surfaces:

- A. Not Exposed-to-view Surfaces: Rough Form Finish, for formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.
- B. Exposed-to-View Surfaces: Apply a smooth rubbed finish to exposed-to-view surfaces, remove debris and projections, patch defective areas with cement grout, and rub smooth. Provide smooth rubbed finish in conformance with the instructions provided by the manufacturer of concrete additive for rubbed finish.

3.06 – Monolithic Slab Finishes:

- A. After placing slabs, plane surface to a tolerance not exceeding 1/2" in 10' when tested with a 10' straightedge. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms or rakes.
- B. Float finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.
 - 1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane so that depressions between high spots do not exceed 5/16" under a 10' straightedge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

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- C. Non-Slip Broom Finish: Apply non-slip stiff broom finish to all exterior concrete pedestrian surfaces. Avoid residue falling on adjacent surfaces. Broom texture is to be even and uniform from one pour to the next.

3.07 – Cleaning:

- A. Remove excess concrete and smears on adjacent surfaces.
- B. Clean soiled surfaces with a water wash while soiling is still wet. Do not use acid wash, or any abrasives to wash brick.

3.08 – Concrete Curing and Protection:

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.
- C. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.
- D. Curing Methods: Perform curing of concrete by moist curing, by moisture-retaining cover curing, by curing compound, and by combinations thereof, as herein specified.
 - 1. Provide moisture curing by following methods:
 - a. Keep concrete surface continuously wet by covering with water.
 - b. Continuous water-fog spray.
 - c. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.
 - 2. Provide moisture-cover curing as follows:
 - a. Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3"

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and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

- E. Curing Formed Surfaces: Cure formed concrete surfaces by moist curing with forms in place for full curing period.
- F. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs and other flat surfaces by application of appropriate curing method.
- G. Final concrete slab surfaces to receive weather proofing and sealant.
- H. All residue falling on adjacent surfaces shall be removed.

3.09 – Removal of Forms:

- A. Formwork not supporting weight of concrete, may be removed after cumulatively curing at not less than 50 degrees F (10 degrees C) for 24 hours after placing concrete provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protections operations are maintained.
- B. Formwork supporting weight of concrete, may not be removed in less than 14 days and until concrete has attained design minimum compressive strength at 28 days.
- C. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.
- D. Form facing material may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.10 – Re-Use of Forms:

- A. Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use “patched” forms for exposed concrete surfaces, except as acceptable to Owner’s Representative.

End of Section