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IFB NO. Y17-783-RM **ISSUED: July 24, 2017**

INVITATION FOR BIDS

FOR

ORANGE COUNTY PORTER TRANSFER STATION STEEL PLATE REPLACEMENT

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PART H
TECHNICAL SPECIFICATIONS

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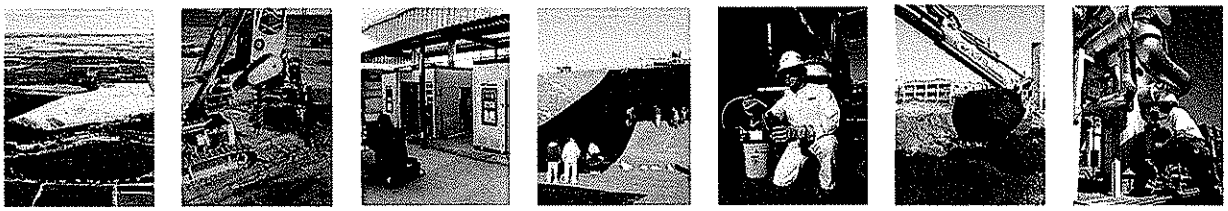
PART H
Volume II

SCS ENGINEERS



Orange County
Porter Transfer Station
Steel Plate Replacement

CIP NO. 4410-038-1061-05-6310
SEQ NO. 91566

Technical Specifications

Prepared for:

Orange County Utilities

ORANGE COUNTY GOVERNMENT FLORIDA

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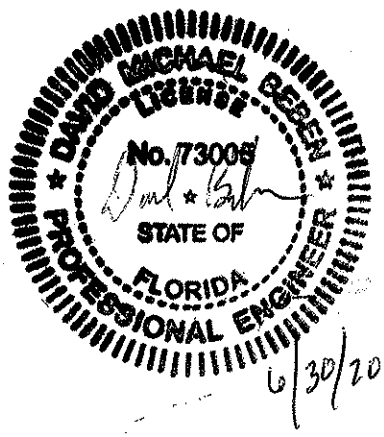

TABLE 01 20 00-1

BID FORM

PROJECT NAME: Porter Transfer Station Steel Plate Replacement

PROJECT ADDRESS: Porter Transfer Station
1326 Good Homes Rd, Orlando, FL 32818

ITEM NO.	ITEM DESCRIPTION	UNIT OF MEASURE	QUANTITY	TOTAL PRICE
001	Steel Plate Replacement	Lump Sum	1	$
002	Tipping Floor Cores and Analysis	Lump Sum	1	$
			TOTAL	$

The Bidder, hereby declares that this Bid is made without connection with any other person, company or parties to make a Bid or proposal; and that it is in all respects fair and in good faith, without collusion or fraud.

Having become completely familiar with the local conditions affecting the cost of Work including the cost of labor and materials at the place where Work is to be executed, and having carefully examined the site conditions as they currently exist, and having carefully examined Bid and Contract Documents together with any Addenda to such Bid Documents, the Bidder hereby proposes and agrees to provide all labor, materials, equipment, transportation and other facilities as necessary, but which may not be separately itemized, and to execute all of the Work described by the aforesaid Bid and Contract Documents for the following:

TOTAL BID PRICE:

IN WORDS: _____

_____

END OF SECTION

SECTION 01000

GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SCOPE AND INTENT

A. Work Included:

1. The Work to be done consists of furnishing all labor, material, equipment and the performance of all Work included in this Contract. The Summary of Work is presented in Section 01010. The Contractor shall furnish all supervision, labor, materials, power, light, heat, fuel, water, tools, appliances, equipment, supplies, and means of construction necessary for proper performance and completion of the work. Contractor shall obtain and pay for all required permits. Contractor shall perform and complete the Work in the manner best estimated to promote rapid construction consistent with safety of life and property and to the satisfaction of the Owner, and in strict accordance with the Contract Documents. The Contractor shall clean up the Work and maintain it during and after construction, until accepted, and shall do all work and pay all costs incidental thereto. Contractor shall repair or restore all structures and property that may be damaged or disturbed during performance of the Work.

2. The cost of incidental Work described in these General Requirements, for which there are no specific Contract Items, shall be considered as part of the general cost of doing the Work and shall be included in the prices for the various Contract Items. No additional payment will be made therefore.

3. The Contractor shall provide and maintain such modern materials, tools, and equipment as may be necessary, in the opinion of the Engineer, to perform in a satisfactory and acceptable manner all the Work required by this Contract. Only equipment of established reputation and proven efficiency shall be used. The Contractor shall be solely responsible for the adequacy of his workmanship, materials and equipment, prior acceptance of the Engineer notwithstanding.

B. Public Utility Installations and Structures:

1. The Contract Documents may contain data relative to existing public utility installations and structures above and below the ground surface. This data is not guaranteed as to their completeness or accuracy and it is the responsibility of the Contractor to make investigations to fully understand the character, condition and extent of all such installations and

structures as may be encountered and as may affect the construction operations.

2. Public utility installations or structures owned or controlled by the Owner or other governmental body which are shown on the Drawings to be removed, relocated, replaced or rebuilt by the Contractor shall be considered as a part of the general cost of doing the Work and shall be included in the prices bid for the various Contract items. No separate payment shall be made therefor.

3. Where public utility installations of structures owned or controlled by the Owner or other governmental body are encountered during the course of the Work, and are not indicated on the Drawings or in the Specifications, and when, in the opinion of the Engineer, removal, relocation, replacement or rebuilding is necessary to complete the Work under this Contract, such work shall be accomplished by the utility having jurisdiction, or such work may be ordered, in writing by the Engineer, for the Contractor to accomplish. If such work is accomplished by the utility having jurisdiction it will be carried out expeditiously and the Contractor shall give full cooperation to permit the utility to complete the removal, relocation, replacement or rebuilding as required. If such work is accomplished by the Contractor, it will be paid for as extra work as provided in the Agreement.

4. The Contractor shall, at all times in performance of the Work, employ accepted methods and exercise reasonable care and skill so as to avoid unnecessary delay, injury, damage or destruction of public utility installations and structures; and shall, at all times in the performance of the Work, avoid unnecessary interference with, or interruption of, public utility services, and shall cooperate fully with the owners thereof to that end.

5. The Contractor shall give written notice to Owner, other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least forty-eight (48) hours in advance of breaking ground in any area or on any unit of the Work.

6. The maintenance, repair, removal, relocation or rebuilding of public utility installations and structures, when accomplished by the Contractor as herein provided, shall be done by methods approved by the owners of such utilities.

7. The Contractor shall make provisions to avoid impacting existing facilities operation or maintenance activities. If an impact is anticipated, the Contractor shall propose a means to maintain existing activities, subject to approval by the Owner. The Owner will not be responsible for any costs associated with such proposed modification.

1.02 DRAWINGS AND PROJECT MANUAL

A. Drawings: When obtaining data and information from the Drawings, figures shall be used in preference to scaled dimensions, and large scale drawings in preference to small scale drawings.

B. Copies Furnished to Contractor:

1. After the Contract has been executed, the Contractor will be furnished two (2) sets of plans (24 inches by 36 inches), one (1) electronic copy of the plans, and one (1) copy of the Project Manual (Contract Requirements and Specifications) and all addenda.

2. The Contractor shall furnish each of the subcontractors, manufacturers, and material suppliers such copies of the Contract Documents as may be required for their work. All copies of the Contract Documents shall be printed from the reproducible sets furnished to the Contractor. All costs of reproduction and printing shall be borne by the Contractor.

C. Supplementary Drawings:

1. When, in the opinion of the Engineer, it becomes necessary to explain more fully the Work to be done or to illustrate the Work further or to show any changes which may be required, drawings known as Supplementary Drawings, with specifications pertaining thereto, will be prepared by the Engineer and the Contractor will be furnished five (5) sets of plans and one (1) copy of the Project Manual (Contract Requirements and Specifications) and all addenda.

2. The Supplementary Drawings shall be binding upon the Contractor with the same force as the Drawings. Where such Supplementary Drawings require either less or more than the estimated quantities of Work, credit to the Owner or compensation therefor to the Contractor shall be subject to the terms of the Agreement.

D. Contractor to Check Drawings and Data:

1. The Contractor shall verify all dimensions, quantities and details shown on the Drawings, Supplementary Drawings, schedules, Specifications or other data received from the Engineer, and shall notify him of all errors, omissions, conflicts, and discrepancies found therein. Failure to discover or correct errors, conflicts or discrepancies shall not relieve the Contractor of full responsibility for unsatisfactory Work, faulty construction or improper operation resulting therefrom nor from rectifying such conditions at no additional expense to Owner or Engineer. Contractor will not be allowed to take advantage of any errors or omissions, as full

instructions will be furnished by the Engineer, should such errors or omissions be discovered.

2. All schedules are given for the convenience of the Owner and the Contractor and are not guaranteed to be complete. The Contractor shall assume all responsibility for the making of estimates of the size, kind, and quality of materials and equipment included in Work to be done under the Contract and additional Work claimed by Contractor.

E. Specifications: The Technical Specifications consist of three parts: General, Products, and Execution. The General Section contains General Requirements which govern the Work. Products and Execution modify and supplement these by detailed requirements for the Work and shall always govern whenever there appears to be a conflict.

F. Intent:

1. All Work called for in the Specifications applicable to this Contract, but not shown on the Drawings in their present form, or vice versa, shall be of like effect as if shown or mentioned in both. Work not specified in either the Drawings or in the Specifications, but involved in carrying out their intent or in the complete and proper execution of the Work, is required and shall be performed by the Contractor as though it were specifically delineated or described.

2. The apparent silence of the Specifications as to any detail, or the apparent omission from them of a detailed description concerning any Work to be done and materials to be furnished, shall be regarded as meaning that only the best general practice is to prevail and that only material and workmanship of the best quality is to be used, and interpretation of these Specifications shall be made upon that basis.

1.03 MATERIALS AND EQUIPMENT

A. Manufacturer:

1. The names of proposed manufacturers, material suppliers, and dealers who are to furnish materials, fixtures, equipment, appliances or other fittings shall be submitted to the Engineer for acceptance, prior to construction, to afford proper investigation and checking. No manufacturer will be accepted for any materials to be furnished under this Contract unless he shall be of good reputation and have a plant of ample capacity. Contractor shall, upon the request of the Engineer, be required to submit evidence that he has manufactured a similar product to the one specified and that it has been previously used for a like purpose for a sufficient length of time to demonstrate its satisfactory performance.

2. All transactions with the manufacturers or subcontractors shall be through the Contractor, unless the Contractor shall request, in writing to the Engineer, that the manufacturer or subcontractor deal directly with the Engineer. Any such transactions shall not in any way release the Contractor from his full responsibility under this Contract and will not impose any liability on the Owner or Engineer.

3. Any two or more pieces of material or equipment of the same kind, type or classification, and being used for identical types of service, shall be made by the same manufacturer.

B. Delivery:

1. The Contractor shall deliver materials to the site in ample quantities to insure the most speedy and uninterrupted progress of the Work so as to complete the Work within the scheduled time. However, the Contractor shall not store materials on-site for more than thirty (30) days before installation. This will not supersede more stringent requirements noted in Division 2.

2. The Contractor shall also coordinate deliveries in order to avoid delay in, or impede, the progress of the Work of any related Contractor.

3. All materials and equipment shall be properly stored on site in accordance with these specifications and the manufacturer's recommendations.

C. Tools and Accessories:

1. The Contractor shall, unless otherwise stated in the Contract Documents, furnish with each type, kind or size of equipment, one complete set of suitably marked high grade special tools and appliances which may be needed to adjust, operate, maintain or repair the equipment. Such tools and appliances shall be furnished in accepted painted steel cases, properly labeled and equipped with good grade cylinder locks and duplicate keys.

2. Spare parts shall be furnished as specified in the specifications.

3. Each piece of equipment shall be provided with a substantial nameplate, securely fastened in place and clearly inscribed with the manufacturer's name, year of manufacture, serial number, weight and principal rate data.

D. Service of Manufacturer's Engineer:

1. The Contract prices for equipment shall include the cost of furnishing a competent and experienced engineer or superintendent who shall represent the manufacturer and shall assist the Contractor, when required, to install,

adjust, test and place in operation, the equipment in conformity with the Contract Documents.

2. Prior to the equipment being placed in permanent operation by the Owner, such Engineer or superintendent shall make all adjustments and tests required by the Engineer to prove that such equipment is in proper and satisfactory operating condition, and shall instruct such personnel as may be designated by the Owner in the proper operation and maintenance of such equipment.

1.04 INSPECTION AND TESTING

A. General:

1. Inspection and testing of materials will be provided by the Contractor unless otherwise specified.

2. For tests specified to be made by the Contractor, the testing personnel shall make the necessary inspections and tests and the reports thereof shall be in such form as will facilitate checking to determine compliance with the Contract Documents. Two (2) originally executed and five (5) copies of the reports shall be submitted and authoritative certification thereof shall be furnished to the Engineer as a prerequisite for the acceptance of any material or equipment.

3. If, in the performing of any test of any material or equipment, it is ascertained by the Engineer that the material or equipment does not comply with the Contract Documents, the Contractor will be notified thereof and he will be directed to refrain from delivering said material or equipment, or to remove it promptly from the site or from the Work and replace it with acceptable material, without cost to the Owner or Engineer.

4. Tests of electrical and mechanical equipment and appliances shall be conducted in accordance with recognized test codes of the ANSI, ASME, or the IEEE, except as may otherwise be stated herein.

5. The Contractor shall be fully responsible for the proper operation of equipment during tests and instruction periods and shall neither have nor make any claim for damage which may occur to equipment prior to the time when the Owner executes final acceptance of the Work.

B. Costs:

1. The cost of preliminary shop and field tests of equipment and certain other tests specifically called for in the Contract Documents shall be borne by the Contractor and such costs shall be deemed to be included in the Contract price.

2. Materials and equipment submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the Owner for compliance. The Contractor is responsible for providing sufficient information to allow Engineer to determine that the item of material or equipment proposed is equivalent to that specifically named and an acceptable substitute therefor. If in the sole discretion of the Engineer, tests of the proposed substitute items are necessary for Engineer's review, the substitute items will be tested by the Contractor at no additional cost to the Owner.

C. Inspection of Materials:

1. The Contractor shall give notice in writing to the Engineer, sufficiently in advance of his intention to commence the manufacture or preparation of materials especially manufactured or prepared for use in or as part of the permanent construction. Such notice shall contain a request for inspection, the date of commencement and the expected date of completion of the manufacture or preparation of materials. Upon receipt of such notice, the Engineer will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials or Engineer will notify the Contractor that the inspection will be made at a point other than the point of manufacture.

2. The Contractor must comply with these provisions before shipping any material. Such inspection shall not release the Contractor from the responsibility for furnishing materials meeting the requirements of the Contract Documents.

D. Certificate of Manufacture:

1. The Contractor shall furnish to Engineer authoritative evidence in the form of Certificate of Manufacture that the materials to be used in the Work have been manufactured and tested in conformity with the Contract Documents.

2. These certificates shall be notarized and shall include copies of the results of physical tests and chemical analyses, where necessary, that have been made directly on the product to be provided by the manufacturer. Two (2) original and five (5) copies are to be provided to the Engineer.

E. Shop Tests:

1. Testing for pressure, duty, capacity, rating, efficiency, performance, function or special requirements which are specified shall be tested in the shop of the manufacturer in a manner which shall conclusively prove that its characteristics comply fully with the requirements of the Contract Documents.

2. No such equipment or materials shall be shipped to the Work site until the Engineer notifies the Contractor, in writing, that the results of such tests are acceptable.

3. Two (2) signed original and five (5) copies of the manufacturer's actual test data and interpreted results thereof, accompanied by two (2) signed original and five (5) copies of a certificate of authenticity sworn to by a responsible official of the manufacturing company and/or independent laboratory, shall be forwarded to the Engineer for acceptance.

4. The cost of shop tests and of furnishing manufacturer's preliminary and shop test data of operating equipment shall be borne by the Contractor.

5. Failure of Tests:

   a. Any defects in the materials or their failure to meet the tests, guarantees or requirements of the Contract Documents shall be promptly corrected by the Contractor at no additional cost to Owner. The decision for the Owner as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive.

   b. If the Contractor fails to make these corrections or if the improved materials, when tested, shall again fail to meet the guarantees or specified requirements, the Owner, notwithstanding its partial payment for Work, and materials, may reject the materials and may order the Contractor to remove them from the site at the Contractor's own expense.

   c. In case the Owner rejects any materials, then the Contractor shall replace the rejected materials within a reasonable time. If the Contractor fails to do so, the Owner may, after the expiration of a period of thirty (30) calendar days after giving notice in writing, proceed to replace such rejected materials and the cost thereof shall be deducted from any compensation due or which may become due to the Contractor under the Contract.

F. Final Inspection: During such final inspections, the Work shall be clean and functional. In no case will the final estimate be prepared until the Contractor has complied with all requirements set forth and the Engineer and Owner have made their final inspection of the entire Work and are satisfied that the entire Work is properly and satisfactorily constructed in accordance with the requirements of the Contract Documents.

1.05 TEMPORARY STRUCTURES

A. Temporary Fences: If, during the course of the Work, it is necessary to remove or disturb any fence or part thereof, the Contractor shall coordinate with the Engineer and provide a suitable temporary fence at no additional cost to Owner. The Engineer shall be solely responsible for the determination of the necessity for approving a temporary fence and the type of temporary fence to be used.

B. Responsibility for Temporary Structures: In executing the Contract, the Contractor assumes full responsibility for the sufficiency and safety of all temporary structures or Work and for any damage which may result from their failure or their improper construction, maintenance or operation and will indemnify and hold harmless the Owner and Engineer from all claims, suits or actions and damages or costs of every description arising by reason of failure to comply with the above provisions.

1.06 ACCIDENT PREVENTION

A. Precautions shall be exercised at all times for the protection of person and property. The safety provisions of applicable laws, building and construction codes shall be observed.

B. The Contractor shall comply with the U.S. Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act of 1970 (PL 91-596), and under Hours and Safety Standards Act Section 107 of the contract Work. Hours and Safety Standards Act (PL 91-54), except where state and local safety standards exceed the federal requirements and except where state safety standards have been approved by the Secretary of Labor in accordance with provisions of the Occupational Safety and Health Act, shall be complied with. Updates of the referenced regulations also shall apply.

C. First Aid: The Contractor shall keep upon the site, at each location where Work is in progress, a completely equipped first aid kit and shall provide ready access thereto at all times when people are employed on the Work.

1.07 ADJACENT STRUCTURES AND LANDSCAPING

A. Responsibility:

1. The Contractor shall also be entirely responsible and liable for all damage or injury as a result of his operations to all other adjacent public and private property, structures of any kind and appurtenances thereto met with during the progress of the Work.

2. The cost of protection, replacement in their original locations and conditions or payment of damages for injuries to such adjacent public and private property and structures affected by the work, whether or not shown

on the Drawings, and the removal, relocation and reconstruction of such items called for on the Drawings or specified shall be included in the various Contract Items and no separate payments will be made therefore.

3. Contractor is expressly advised that the protection of buildings, structures, road, tanks, pipelines, etc. and related work adjacent and in the vicinity of his operations, wherever they may be, is solely his responsibility.

4. Conditional inspection of buildings or structures in the immediate vicinity of the project which may reasonably be expected to be affected by the Work shall be performed by and be the responsibility of the Contractor.

5. Contractor shall, before starting operations, make an examination of the adjacent structures, buildings, facilities, etc., and record by notes, measurements, photographs, etc., conditions which might be aggravated by open excavation and construction. Repairs or replacement of all conditions disturbed by the construction shall be made to the satisfaction of the Owner and Engineer. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be provided to the Owner.

6. Prior to the beginning of any excavations the Contractor shall advise the Owner of all structures on which he intends to perform Work or which performance of the Work will affect.

1.08 PROTECTION OF WORK AND PUBLIC

A. Barriers and Lights:

1. During the prosecution of the Work, the Contractor shall put up and maintain at all times such barriers and lights as will effectually prevent accidents.

2. The Contractor shall provide suitable barricades, red lights, "danger" or "caution" or "street closed" signs and flagmen at all places where the Work causes obstructions to the normal traffic or constitutes in any way a hazard to the public.

B. Noise:

1. The Contractor shall eliminate noise to as great an extent as practicable at all times. Air compressing equipment shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers. The Contractor shall construct sound barriers as necessary to eliminate noise.

2. In the vicinity of hospitals and schools, special care shall be used to avoid noise or other nuisances. The Contractor shall strictly observe all local regulations and ordinances covering noise control.

3. Except in the event of an emergency, no work shall be conducted between the hours of 8:00 p.m. and 7:30 a.m. If the proper and efficient prosecution of the Work requires operations during the night, the written permission of the Owner shall be obtained before starting such items of the Work.

C. Access to Public Services: Neither the materials excavated nor the materials or equipment used in the construction of the Work shall be so placed as to prevent free access to all fire hydrants, valves, or manholes.

D. Dust Prevention: The Contractor shall prevent dust nuisance from his operations or from traffic by keeping the roads and/or construction areas dampened with water at all times.

1.09 CUTTING AND PATCHING

A. The Contractor shall do all cutting, fitting or patching of the Work that may be required to make the several parts thereof join and coordinate in a manner satisfactory to the Engineer and in accordance with the Drawings and Specifications.

B. The Work must be done by competent workmen skilled in the trade required by the restoration.

1.10 CLEANING

A. During Construction:

1. During construction, the Contractor shall, at all times, keep the site of the Work and adjacent premises as free from material, debris and rubbish as is practicable and shall remove the same from any portion of the site if, in the opinion of the Owner or Engineer, such material, debris, or rubbish constitutes a nuisance or is objectionable.

2. The Contractor shall remove from the site all of his surplus materials and temporary structures when no further need therefore develops. Contractor shall be responsible and liable for all spillage and incur all associated costs including, but not limited to, costs related to repair and maintenance resulting from damages thereof, and fines that may be levied as a result of citations given by State or local regulatory agencies.

B. Final Cleaning:

1. At the conclusion of the Work, all erection plant, tools, temporary structures and materials belonging to the Contractor shall be promptly removed, and shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances to a facility permitted to manage these materials.

2. The Contractor shall thoroughly clean all equipment and materials installed and shall deliver such materials and equipment undamaged in a bright, clean, polished and new operating condition.

1.11 MISCELLANEOUS

A. Existing Facilities: The Work shall be conducted to maintain existing facilities in operation insofar as is possible. Requirements and schedules of operation for maintaining existing facilities in service during construction shall be described in the Specific Provisions.

B. Use of Chemicals: All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfection, polymer, reactant, or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with instructions. Contractor shall obtain written approval from Owner prior to use of chemicals. Contractor shall maintain a file onsite of MSDS for any used chemicals.

C. Cooperation With Other Contractors and Forces:

1. During progress of Work under this Contract, it may be necessary for other contractors and persons employed by the Owner to work in or about the project.

2. The Owner reserves the right to put such other contractors to work and to afford such access to the work area to be performed at times as the Owner deems proper.

3. The Contractor shall not impede or interfere with the work of such other contractors engaged in or about the Work and shall so arrange and conduct the work that such other contractors may complete their work at the earliest date possible.

4. The Contractor shall not interfere with or disrupt the operation of the transfer station.

D. Fuels and oils stored on site shall have secondary containment.

E. Construction shall be conducted and shall result in construction of the improvements of this project in full accordance with the conditions of the permits granted for the project.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 LOCATION OF WORK

A. Work included in this Contract will be conducted at the Porter Transfer Station, 8750 White Road, Orlando, Florida 32891. The Porter Transfer Station is owned by the Orange County Board of County Commissioners and operated by the Solid Waste Division of Orange County Public Utilities.

1.02 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work for this project includes, but is not limited to, removal and disposal of existing damaged steel plate and anchoring system in specified areas along the interior concrete wall of the tipping floor and east and west pits; selective wall demolition of spalled/weal exposed concrete after removal of steel plate and strip brush connecting bracket (up to depths specified in the Drawings), wall preparation including shot blasting and cleaning; fabricating and installing new steel plate and anchoring system; constructing and/or installing/removing any necessary formwork; placement of concrete grout behind new steel plate; saw cut and remove specified locations of existing tipping floor at base of new steel plate to depths indicated in the Drawings; installing bonding agent and high-strength concrete where tipping floor was saw cut and removed at base of steel plate; concrete testing; collecting four concrete cores of the existing tipping floor and performing/reporting certified petrographic and mineralogical aggregate analysis of the cores (party independent from the Contractor); repairing tipping floor concrete at coring sample locations; and preparation of the Record Drawings in accordance with the Contract Documents.

B. Contractor shall be aware of the nature of the activities at a transfer station which may restrict access to portions of the site due to general transfer station operations.

C. Contractor shall complete all Work described above and all Work incidental whether specifically mentioned or not in accordance with the Drawings, Specifications, and Contract Documents.

1.03 WORK BY OTHERS

A. Work may be conducted at the site by other contractors during the performance of the Work under this contract. The Contractor shall conduct their operations to minimize interference with other contractors and shall cooperate fully with such contractors and the project representatives to provide continued safe access to perform their respective contracts.

1.04 CONTRACTOR USE OF SITE

A. Access to Site: Limited to public rights-of-way at the scalehouse facility.

B. Working Hours and Period: On site Work by Contractor and their subcontractors is limited to 8:00 AM to 8:00 PM, Monday through Sunday. No Work shall be performed on legal holidays without written permission of the Owner. The transfer station is closed on legal holidays. If the Contractor desires to work after the hours stated or on legal holidays, it shall be requested in writing at least forty-eight (48) hours in advance.

C. The Contractor shall reimburse the Owner for additional construction management and/or inspection costs incurred as a result of unscheduled Work in excess of the working hours indicated in 1.04.B. At the Owner's opinion, unscheduled Work costs may either be deducted from the Contractor's monthly payment request or deducted prior to release of final payment. All overtime rates shall be at 1.5 times the prevailing staff rates; and Sunday and legal holiday rates will be at 2 times the prevailing staff rates, unless otherwise specified in the General Conditions of the Contract Documents.

D. Construction Operations: Limited to the areas as noted on Drawings.

E. Limited Use of Property: Construction shall not obstruct the Owner normal access to, and use of, at least one of the two pit areas and transfer station floor within the transfer building during all facility hours of operation.

1.05 WORK SEQUENCE

A. The Work is to be accomplished at the Porter Transfer Building, requiring Work on a portion of the east and west side pit (openings to the tunnel). One pit shall be available for the Owner's use at all times. Coordinate construction schedule and operations with the Owner.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

A. Payments to the Contractor shall be made on the basis of the Bid Items as full and complete payment for furnishing all material, labor, tools and equipment, and for performing all operations necessary to complete the Work included in the Contract Documents. Such compensation shall also include payments for any loss or damages arising directly or indirectly from the Work or from any discrepancies between the actual quantities of Work and those shown in the Contract Documents, or from any unforeseen difficulties which may be encountered during the prosecution of the Work until final acceptance by the Owner and Engineer. This is a lump sum contract.

B. The prices stated in the Bid Form include all costs and expenses for taxes, labor, equipment, material, commissions, transportation charges and expenses, patent fees and royalties, labor for handling material during inspection, together with any and all other costs and expenses for performing and completing the Work, as shown on the Drawings and specified herein. The basis of payment for Bid Items at the price shown in the Bid Form shall be in accordance with its description of the item in this section and as related to the Work specified and shown on the Drawings.

C. The Contractor's attention is called to the fact that the quotations for the various items of Work are intended to establish a total price for completing the Work in its entirety. The cost of Work for which there is not a separate Bid Item shall be included in a related Bid Item, or shall be distributed over all Bid Items, such that the bid for the project reflects the total price for completing the Work in its entirety.

D. The Owner will have the right to issue one or more Change Orders prior to Final Payment, which will reconcile actual quantities furnished and accepted with the estimated quantities found in the Bid Form.

E. Payment of any Bid Item, in part or in full, prior to Final Payment, shall not be regarded as acceptance of that item.

F. The Contractor's attention is called to the fact that if shown, the estimated quantities appearing in the Bid Form consists of the Engineer's opinion of what will be required to complete the Work as designed. Neither the Owner nor the Engineer guarantees the accuracy or exactness of the figures. The actual quantities will be determined during and after construction, based upon the measurements herein described. The estimated quantities are not a guarantee of the magnitude of Work. The Owner reserves the right to authorize additional

amounts of any or all of the Bid Items, and to reduce or totally eliminate any of the Bid Items, without affecting any other Bid Items.

G. All existing elevations and dimensions shown on the Drawings are approximate and the Contractor is responsible to field verify all elevations and dimensions, as needed.

H. The Contractor shall immediately report overpayment on any item.

I. The Owner will have the right to deduct for overpayment of any item, when discovery of overpayment is made, and to adjust the amounts due the Contractor accordingly.

J. The Owner will have the right to require the Contractor to expose any item which was covered after installation (unless previously inspected and tested by Engineer) for the purpose of measuring, testing, or inspecting the item; and the Contractor shall comply with such request. No separate or additional payment will be made for such extra work. The Contractor shall, when accepted or directed to by the Owner, restore and repair the Work in conformance to the Contract Documents.

K. Work performed beyond the Contract requirements shall be approved and accepted before payment may be made. Mere knowledge by the Owner or the Engineer that the Contractor has performed a task shall not constitute acceptance of the task for the purpose of payment, and the Owner will not be under obligation to pay for the task.

L. The Owner reserves the right to request of the Contractor a breakdown of any of the Lump Sum Bid Items, which the Contractor shall promptly provide. The breakdown shall consist of labor, equipment, and the cost of material for the Bid Item or the various components included within the Bid Item.

M. Lump Sum items have been established for all portions of the Work except as previously noted. The term "Lump Sum" shall mean complete payment for the unit of Work described. Where the unit measurement is described as "Lump Sum", the unit shall include all necessary appurtenances and incidentals required to complete the unit of Work in its entirety. Measurement of the Lump Sum Work will be estimated by the values in the Schedule of Values as applied to the completed portion of Work for purposes of monthly payment estimates.

PART 2 - MEASUREMENTS

A. Progress payments for Lump Sum Bid Items will be considered on a percent completed basis. The Schedule of Values prepared as per the General Conditions will be used as the basis of the percent complete. The Contractor shall estimate

the value of the Work performed, subject to the review and acceptance by the Engineer.

B. The Engineer and Owner will review installed quantities prior to making payments. The Contractor shall give the Engineer and Owner access to all field data, calculations, and computations. In the event of discrepancies or the need for additional field data to confirm quantities, the Contractor shall be responsible for the additional field measurement cost.

C. Prior to submitting the first requisition for payment, the Contractor shall secure the Engineer's and Owner's concurrence on the methods and procedures for making field measurements and the manner in which calculations will be performed in preparation of progress and final payment estimates.

D. Quantity estimates, field measurements, certifications, and related backup information that are submitted in support of payment request will be considered by the Owner as having been prepared by the Contractor, even when prepared by or submitted on behalf of the Contractor by others.

E. The value of furnished materials, for which partial progress or full payment is made during the course of the Work that remain unused at the closing of the Contract, shall be deducted from the amounts due the Contractor in the Final Payment.

PART 3 - PAYMENT ITEMS (BY BID ITEM NO.)

A. Item No. 1 Steel Plate Replacement

Measurement: Measurement for this item shall be on a Lump Sum basis based on percentage of Work completed.

Payment: Payment for this item shall be Lump Sum price and shall include full compensation for all material, labor, equipment, and work incidental thereto, necessary to replace the damaged steel plate in accordance with the Drawings, Specifications, and Contract Documents. Payment shall include removal and disposal of existing damaged steel plate and anchoring system in specified areas along the interior concrete wall of the tipping floor and east and west pits; selective wall demolition of spalled/weal exposed concrete after removal of steel plate and strip brush connecting bracket (up to depths specified in the Drawings), wall preparation including shot blasting and cleaning; fabricating and installing new steel plate and anchoring system; constructing and/or installing/removing any necessary formwork; placement of concrete grout behind new steel plate; saw cut and remove specified locations of existing tipping floor at base of new steel plate to depths indicated in the Drawings; installing bonding agent and high-strength concrete where tipping floor was saw cut and removed at base of steel

plate; concrete testing; and preparation of the Record Drawings in accordance with the Contract Documents.

B. Item No. 2 Tipping Floor Cores and Analysis

Measurement: Measurement for this item shall be on a Lump Sum basis based on percentage of Work completed.

Payment: Payment for this item shall be Lump Sum price and shall include full compensation for all material, labor, equipment, and work incidental thereto, necessary to perform concrete core analysis for the existing tipping floor in accordance with the Drawings, Specifications, and Contract Documents. Payment shall include collecting four concrete cores of the existing tipping floor and performing/reporting certified petrographic and mineralogical aggregate analysis of the cores (party independent from the Contractor); repairing tipping floor concrete at coring sample locations; in accordance with the Contract Documents.

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENTS

PART 1 - GENERAL

1.01 PAY REQUEST SUBMISSION

Submit applications for payment to the Engineer in accordance with schedule established by General Conditions of the Contract and Contract between Owner and Contractor.

1.02 FORMAT AND DATA REQUIRED

A. Submit payment applications following the Contractor's Narrative Report Outline and the Owners standard application form in accordance with Article 18, Payment and Completion, of the General Conditions.

B. Provide itemized percent completed items according to Work items listed in the schedule of values accepted by the Engineer.

C. Provide from each subcontractor/supplier, a Subcontractor's/Supplier's Certification in accordance with Article 18 of the General Conditions.

D. Provide Sales Tax Report. This report shall include a list of sales tax paid during one pay period lagging the period described in the application for payment.

1.03 PREPARATION OF APPLICATION FOR EACH PROGRESS PAYMENT

A. Application Form:

1. Fill in required information, including that for Change Orders executed prior to date of submittal of application.

2. Fill in summary of dollar values to agree with respective totals indicated on continuation sheets.

3. Execute certification with signature of a responsible officer of Contractor.

B. Continuation Sheets:

1. Fill in total list of all scheduled component items of Work, with item number and scheduled dollar value for each item.

2. Fill in dollar value in each column for each scheduled line item when work has been performed or products stored. Round off values to nearest dollar, or as specified for Schedule of Values.

3. List each Change Order executed prior to date of submission or the pay request, at the end of the schedule of values. List by Change Order Number, and description, as thou an original component item of Work.

4. To receive approval for payment on component material stored on site, submit copies of the original paid invoices with the application for payment. Any materials stored on site that are included in the pay request must be installed prior to the next pay request submitted.

5. As provided for in the "Certification of Contractor" form, the Contractor shall certify, for each current pay request, that all previous progress payment received from the Owner, under this Contract, have been applied by the Contractor to discharge in full all obligations of the Contractor in connection with Work covered by prior Applications for Payment, and all materials and equipment incorporated into the Work are free and clear of all liens, claims, security interest and encumbrances.

   Contractor shall attach to each Application for Payment like affidavits by all Subcontractors.

6. Contractor will complete the sales tax form with each pay request and will maintain records of the sales taxes should the Owner need receipts for confirmation of the information.

1.04 SUBSTANTIATING DATA FOR PROGRESS PAYMENTS

A. When the Owner or the Engineer requires substantiating data, Contractor shall submit suitable information, with a cover letter identifying:

   1. Project.

   2. Application number and date.

   3. Detailed list of enclosures.

   4. For stored products:

      a. Item number and identification as shown on application.

      b. Description of specific material.

B. Submit one copy of data and cover letter for each copy of application.

C. The Contractor is to maintain an updated set of drawings to be used as Record Drawings in accordance with Section 01720. As a prerequisite for monthly progress payments, the Contractor is to exhibit the updated record drawings for review by the Owner and the Engineer.

1.05 PREPARATION OF APPLICATION FOR FINAL PAYMENT

A. Fill in Application form as specified for progress payments.

B. As a prerequisite for final payment, Contractor is to submit a "Consent of Surety" acknowledgement of final payment request letter showing amount of payment which the Contractor is requesting.

1.06 SUBMITTAL PROCEDURE

A. Submit Applications for Payment to the Engineer for review at the time stipulated during the pre-construction meeting.

B. Number of copies for each Application for Payment:

1. Engineer: Two (2) copies

2. Contractor: As required for his needs

C. When the Engineer finds the payment application properly completed and correct, the Contractor will proceed with submittal in accordance with Article 18, Payment and Completion, of the General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01041

PROJECT COORDINATION

PART 1 - GENERAL

1.01 OBSTRUCTIONS

A. All water pipes, storm drains, force mains, telephone or power cables or conduits, and all other obstructions, whether or not shown, shall be temporarily removed from or supported across proposed construction area. Before disconnecting any pipes or cables, the Contractor shall obtain permission from the Owner, or shall make suitable arrangements for their disconnection by the Owner. The Contractor shall coordinate these operations with the Owner. The Contractor shall be responsible for any damage to any such pipes, conduits or cables, and shall restore them to service promptly as soon as the Work has progressed past the point involved. Locations of water, sanitary, drainage, power and telephone installations in vicinity of proposed work must be verified in the field. Any discrepancies or differences found shall be brought to the attention of the Owner in order that necessary changes may be made to permit progress of Work. These conditions are supplemental to general requirements elsewhere in these specifications.

1.02 DAMAGE TO EXISTING STRUCTURES AND UTILITIES

A. The Contractor shall be responsible for maintaining and repairing all damage to roads beyond the limits of this Contract, buildings, telephone or other cables, water pipes, sanitary pipes, or other structures which may be encountered, whether or not shown on the Drawings.

B. Information shown on the Drawings as to the location of known existing utilities has been prepared from the most reliable data available to the Engineer. This information is not guaranteed, however, and it shall be the Contractor's responsibility to determine the location, character and depth of any existing utilities. The Contractor shall assist the utility companies, by every means possible to determine said locations. Extreme caution shall be exercised to eliminate any possibility of any damage to utilities resulting from his activities.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. The Engineer shall schedule and administer a Pre-Construction meeting, periodic progress meetings, and specially called meetings throughout the progress of the work. The Engineer shall:

   a. Prepare agenda for meetings

   b. Make physical arrangements for meetings

   c. Preside at meetings

2. Representatives of Contractor's, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.

3. The Contractor shall attend meetings to ascertain that work is expedited and consistent with Contract Documents and construction schedules.

B. Related Requirements Described Elsewhere:

1. Construction Schedules: General Conditions

2. Shop Drawings, Working Drawings, and Samples: Section 01340

3. Project Record Documents: Section 01720

1.02 PRECONSTRUCTION MEETING

A. A preconstruction meeting shall be scheduled for no later than five (5) days after date of Notice to Proceed.

B. Location: The Porter Transfer Station offices.

C. Attendance:

1. Owner

2. Engineer and his professional consultants

3. Contractor's superintendent

4. Major subcontractors

5. Others as appropriate

D. Suggested Agenda:

1. Distribution and discussion of:

   a. List of major subcontractors and suppliers

   b. Projected schedules

2. Critical work sequencing: Relationships and coordination with other contracts and/or work.

3. Major equipment deliveries and priorities.

4. Project coordination: Designation and responsible personnel.

5. Procedures and processing of:

   a. Field decisions

   b. Proposal requests

   c. Submittals

   d. Change orders

   e. Applications for payment

6. Submittal of Shop Drawings, project data and samples.

7. Adequacy of distribution of Contract Documents.

8. Procedures for maintaining Record Documents.

9. Use of premises:

   a. Office, Work and storage areas.

   b. Owner's requirements.

   c. Access and traffic control.

10. Construction facilities, controls and construction aids.

11. Temporary utilities.

12. Safety and first aid procedures.

13. Check of required Bond and Insurance certifications.

14. Completion time for contract and liquidated damages.

15. Request for extension of contract time.

16. Request for a weekly job meeting for all involved.

17. Security procedures.

18. Procedures for making partial payments.

19. Guarantee on completed work.

20. Equipment to be used.

21. Project inspection

22. Labor requirements.

23. Laboratory testing of material requirements.

24. Inventory of material stored on site provisions.

25. Housekeeping procedures.

26. Posting of signs.

27. Pay request submittal dates.

28. Equal opportunity requirements.

1.03 PROGRESS MEETINGS

A. At the discretion of the Owner, periodic progress meetings may be held.

B. Location of the meetings: Porter Transfer Station offices.

C. Attendance:

1. Engineer and his professional consultants as needed.

2. Contractor

3. Owner's representative

4. Subcontractors as appropriate to the agenda.

5. Others as appropriate.

D. Suggested Agenda:

1. Review approval of minutes of previous meeting.
2. Review of work progress since previous meeting.
3. Field observations, problems, conflicts.
4. Problems which impede Construction Schedule.
5. Review of off-site fabrication, delivery schedules.
6. Corrective measures and procedures to regain projected schedule.
7. Revisions to Construction Schedule.
8. Progress schedule during succeeding work period.
9. Coordination of schedules.
10. Review submittal schedules; expedite as required.
11. Maintenance of quality standards.
12. Pending changes and substitutions.
13. Review proposed changes for:
    a. Effect on Construction Schedule and on completion date.
    b. Effect on other contracts of the Project.
14. Other business.
15. Construction schedule.
16. Critical/long lead items.

E. The Contractor is to attend progress meetings and is to study previous meeting minutes and current agenda items to be prepared to discuss pertinent topics such as deliveries of materials and equipment, progress of the work, etc.

F. The Contractor is to provide a current submittal log at each progress meeting in accordance with Section 01340.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01340

SHOP DRAWINGS, WORKING DRAWINGS, AND SAMPLES

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. The Contractor shall submit to the Engineer for review and exception, if any, such working drawings, shop drawings, test reports and data on materials and equipment (hereinafter in this article called data), and material samples (hereinafter in this article called samples) materials list, certificates and affidavits as are required for the proper control of Work, including but not limited to those working drawings, shop drawings, data and samples for materials and equipment specified elsewhere in the Specifications and in the Contract Drawings.

2. Within fourteen (14) calendar days after the Effective Date of the Agreement, the Contractor shall submit to the Engineer a complete materials list of preliminary data on items for which shop drawings are to be submitted. Included in this materials list shall be the names of all proposed manufacturers furnishing specified items. Review of this list by the Engineer shall in no way expressed or implied relieve the Contractor from submitting complete shop drawings and providing materials, equipment, etc., fully in accordance with the Specifications. This procedure is required in order to expedite final review of shop drawings.

3. The Contractor is to maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the Owner and the Engineer. This log should include the following items:

   a. Submittal-description and number assigned.

   b. Date to Engineer.

   c. Date returned to Contractor (from Engineer).

   d. Status of submittal (reviewed no comments, reviewed comments as noted, rejected, revise and resubmit, and not reviewed).

   e. Date of resubmittal and return (as applicable).

   f. Date material release (for fabrication).

   g. Projected date of fabrication.

h. Projected date of delivery to site.

i. Specification section.

j. Drawings sheet number.

B. Related Requirements Described Elsewhere:

1. Conditions of the Contract.

2. Project Record Documents: Section 01720.

1.02 CONTRACTOR'S RESPONSIBILITY

A. **It is the duty of the Contractor to check all drawings, data and samples prepared by or for him before submitting them to the Engineer for review.** Each and every copy of the Drawings and data shall bear Contractor's stamp showing that they have been so checked. Shop drawings submitted to the Engineer without the Contractor's stamp will be returned to the Contractor for conformance with this requirement. Shop drawings shall indicate any deviations in the submittal from requirements of the Contract Documents. If the Contractor takes exception to the specifications, the Contractor shall note the exception in the letter of transmittal to the Engineer.

B. Determine and verify:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

4. Conformance with Specifications.

C. The Contractor shall furnish the Engineer a schedule of shop drawings submittals fixing the respective dates for the submission of shop and working drawings, the beginning of manufacture, testing and installation of materials, supplies and equipment. This schedule shall indicate those that are critical to the progress schedule.

D. The Contractor shall not begin any of the Work covered by a drawing, data, or a sample returned for correction until a revision or correction thereof has been reviewed and returned to him, by the Engineer, with approval.

E. The Contractor shall submit to the Engineer all drawings and schedules sufficiently in advance of construction requirements to provide no less than seven (7) calendar days for checking and appropriate action from the time the Engineer receives them.

F. Each submittal shall be for an individual material. All submittals shall be accompanied with a transmittal letter prepared in duplicate containing the following information:

1. Shop drawing cover page per paragraph 1.04 D of this Section.

2. Date.

3. Project title and number.

4. Contractor's name and address.

5. The number of each shop drawing, project data, and sample submitted.

6. Notification of deviations from Contract Documents.

7. Submittal log number conforming to Specification section numbers.

G. The Contractor shall submit two (2) copies of descriptive or product data submittals to complement shop drawings for the Engineer plus the number of copies which the Contractor requires returned. The Engineer will retain one (1) set. All shop drawings shall be submitted with one (1) reproducible pdf. and two (2) sets of prints. The Engineer will review the hard copies and return to the Contractor the additional set(s) marked-up with appropriate review comments. All shop drawings shall be sized appropriately and legible for review.

H. The Contractor shall be responsible for and bear all costs of damages which may result from the ordering of any material or from proceeding with any part of Work prior to the completion of the review by Engineer of the necessary shop drawings.

I. The Contractor shall be fully responsible for observing the need for and making any changes in the arrangement of piping, connections, wiring, manner of installation, etc., which may be required by the materials/equipment he proposed to supply both as pertains to his own work and any work affected under other parts, headings, or divisions of drawings and specifications.

1.03 ENGINEER'S REVIEW OF SHOP DRAWINGS

A. The Engineer's review of drawings, data and samples submitted by the Contractor will cover only general conformity to the Specifications, external connections, and dimensions which affect the installation. The Engineer's review and exceptions, if any, will not constitute an approval of dimensions, quantities, and details of the material, equipment, device, or item shown.

B. The review of drawings and schedules will be general, and shall not be construed:

1. As permitting any departure from the Contract requirements;

2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. As approving departures from details furnished by the Engineer, except as otherwise provided herein.

C. If the drawings or schedules as submitted describe variations per paragraph 1.04.E., and show a departure from the Contract requirements which Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.

D. When reviewed by the Engineer, each of the shop drawings will be identified as having received such review being so stamped and dated. Shop drawings stamped "REVISE AND RESUBMIT" and with required corrections shown will be returned to the Contractor for correction and resubmittal.

E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing or on resubmitted shop drawings, to revisions other than the corrections requested by the Engineer on previous submissions. The Contractor shall make any corrections required by the Engineer.

F. If the Contractor considers any correction indicated on the drawings to constitute a change to the Contract Drawings or Specifications, the Contractor shall give written notice thereof to the Engineer.

G. Shop drawings and submittal data shall be reviewed by the Engineer for each original submittal and first and second resubmittal; thereafter review time for subsequent resubmittals shall be charged to the Contractor in accordance with the terms of the Engineer's Agreement with the Owner.

H. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

I. Partial submittals will not be reviewed. Submittals not complete will be returned to the Contractor for resubmittal. Unless otherwise specifically permitted by the Engineer, make all submittals in groups containing all associated items for:

1. Systems.

2. Processes.

3. As indicated in specific specifications sections.

All drawings, schematics, manufacturer's product data, certifications and other shop drawing submittals required by a system specification shall be submitted at one time as a package to facilitate interface checking.

1.04 SHOP DRAWINGS

A. When used in the Contract Documents, the term "shop drawings" shall be considered to mean Contractor's plans for materials and equipment which become an integral part of the project. These drawings shall be complete and detailed. Shop drawings shall consist of fabrication, erection and setting drawings and schedule drawings, manufacturer's scale drawings, and wiring and control diagrams. Cuts, catalogs, pamphlets, descriptive literature, and performance and test data, shall be considered only as supportive to required shop drawings as defined above. As used herein, the term "manufactured" applies to standard units usually mass-produced; and "fabricated" means items specifically assembled or made out of selected materials to meet individual design requirements.

B. Manufacturer's catalog sheets, brochures, diagrams, illustrations and other standard descriptive data shall be clearly marked to identify pertinent materials, product or models. Delete information which is not applicable to the Work by striking or cross-hatching.

C. Drawings and schedules shall be checked and coordinated with the Work of all trades involved, before they are submitted for review by the Engineer and shall bear the Contractor's stamp of approval as evidence of such checking and coordination. Drawings or schedules submitted without this stamp of approval shall be returned to the Contractor for resubmission.

D. Each shop drawing shall have a blank area 3-1/2 inches by 3-1/2 inches, located adjacent to the title block. The title block shall display the following:

1. Project Title and Number.
2. Name of project building or structure.
3. Number and title of the shop drawing.
4. Date of shop drawing or revision.
5. Name of Contractor and subcontractor submitting drawing.
6. Supplier/manufacturer.
7. Separate detailer when pertinent.
8. Specification title and number.
9. Specification section.

10. Application Contract Drawing Number.

E. If drawings show variations from Contract requirements because of standard shop practice or for other reasons, the Contractor shall describe such variations in his letter of transmittal. If acceptable, proper adjustment in the Contract shall be implemented where appropriate. If the Contractor fails to describe such variations, he shall not be relieved of the responsibility for executing the Work in accordance with the Contract, even though such drawings have been reviewed.

F. Data on materials and equipment include, without limitation, materials and equipment lists, catalog data sheets, cuts, performance curves, diagrams, materials of construction and similar descriptive material. Materials and equipment lists shall give, for each item thereon, the name and location of the supplier or manufacturer, trade name, catalog reference, size, finish and all other pertinent data.

G. For all mechanical and electrical equipment furnished, the Contractor shall provide a list including the equipment name, and address and telephone number of the manufacturer's representative and service company so that service and/or spare parts can be readily obtained.

H. All manufacturers or equipment suppliers who proposed to furnish equipment or products shall submit an installation list to the Engineer along with the required shop drawings. The installation list shall include at least five (5) installations where identical equipment has been installed and has been in operation for a period of at least one (1) year.

I. Only the Engineer will utilize the color "red" in marking Shop Drawing submittals.

1.05 WORKING DRAWINGS

A. When used in the Contract Documents, the term "working drawings" shall be considered to mean the Contractor's plan for temporary structures such as temporary bulkheads, support of utilities, ground water control systems, forming and falsework; for underpinning; and for such other Work as may be required for construction but does not become an integral part of the project.

B. Copies of working drawings as noted in paragraph 1.05 A. above, shall be submitted to the Engineer where required by the Contract Documents or requested by the Engineer, and shall be submitted at least seven (7) calendar days (unless otherwise specified by the Engineer) in advance of their being required for Work.

C. Working drawings shall be signed by a registered Professional Engineer, currently licensed to practice in the State of Florida and shall convey, or be accompanied by, calculation or other sufficient information to completely explain the structure, machine, or system described and its intended manner of use. Prior

to commencing such Work, working drawings must have been reviewed without specific exceptions by the Engineer, which review will be for general conformance and will not relieve the Contractor in any way from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error are assumed by the Contractor; the Owner and Engineer shall have no responsibility therefor.

1.06 SAMPLES

A. The Contractor shall furnish, for review by the Engineer, samples required by the Contract Documents or requested by the Engineer. Samples shall be delivered to the Engineer as specified or directed. The Contractor shall prepay all shipping charges on samples. Materials or equipment for which samples are required shall not be used in work until accepted by the Engineer.

B. Samples shall be of sufficient size and quantity to clearly illustrate:

1. Functional characteristics of the product, with integrally related parts and attachment devices.

2. Full range of color, texture and pattern.

3. A minimum of two samples of each item shall be submitted.

C. Each sample shall have a label indicating:

1. Name of project.

2. Name of Contractor and Subcontractor.

3. Material or equipment represented.

4. Place of origin.

5. Name of producer and brand (if any).

6. Location in project.

(Samples of finished materials shall have additional marking that will identify them under the finished schedules).

D. The Contractor shall prepare a transmittal letter in triplicate for each shipment of samples containing the information required in paragraph 1.06 C. above. He shall enclose a copy of this letter with the shipment and send a copy of this letter to the Engineer. Review of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any Contract requirements.

E. Accepted samples not destroyed in testing shall be sent to the Engineer or stored at the site of the Work. Accepted samples of the hardware in good condition will be marked for identification and may be used in the Work. Materials and equipment incorporated in Work shall match the accepted samples. Samples which failed testing or were not accepted will be returned to the Contractor at his expense, if so requested at time of submission.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Submit to the Engineer a Schedule of Values allocated to the various lump sum portions of the Work at the Pre-Construction Conference and in accordance with the successful bidder's bid schedule/cost estimating worksheet.

B. Upon request of the Engineer, support the values with data which will substantiate their correctness.

C. The Schedule of Values unless objected to by the Engineer, shall be used only as the basis for the Contractor's Applications for Payment.

1.02 RELATED REQUIREMENTS

A. General Conditions and Requirements of the Contract.

1.03 FORM AND CONTENT OF SCHEDULE OF VALUES

A. Type schedule on an 8-1/2" x 11" white paper; Contractor's standard forms and computer printout will be considered for approval by the Engineer upon Contractor's request. Identify schedule with:

1. Title of project and location.
2. Owner and purchase order number.
3. Engineer and project number.
4. Name and address of Contractor.
5. Contract designation.
6. Date of submission.

B. Schedule shall list the installed value of the component parts of the Work in sufficient detail to serve as a basis for computing unit values for progress payments during construction.

C. Identify each line item with the number and title of the respective major section of the specifications.

D. For each line item which has installed value of more than $20,000, breakdown costs to list major products or operations under each item.

E. For the various portions of the Work:

1. Each item shall include a directly proportional amount of the Contractor's overhead and profit.

2. Total installed cost, with overhead and profit

F. Round off figures to nearest dollar.

G. Make sum of total costs of all items listed in schedule equal to total Contract Sum.

1.04 PREPARING SCHEDULE OF UNIT MATERIAL VALUES

A. Submit a separate schedule of unit prices for materials to be stored on which progress payment will be made.

B. Make form of submittal shall parallel that of the Schedule of Values, with each item identified the same as the line item in the Schedule of Values.

C. Include in unit prices only:

1. Cost of the material.

2. Delivery and unloading at site.

3. Sales taxes.

D. Make sure that unit prices multiplied by quantities given, equal material cost of that item in Schedule of Values.

1.05 REVIEW AND RESUBMITTAL

A. After review by Owner, revise and resubmit Schedule of Values and Schedule of Material Values as required.

B. Resubmit revised Schedules in same manner

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 GENERAL

A. Required testing services are to assist in determination of compliance of the Work. Required services do not relieve the Contractor of its responsibility for compliance with requirements of the Contract Documents.

B. Required services are not intended to limit the Contractor's own quality control procedures, but to establish minimum testing level necessary to monitor compliance of construction materials and methods with Contract Requirements.

1.02 SUBMITTALS

A. Submit two (2) copies of the following information within fourteen (14) calendar days of the Notice to Proceed:

1. Independent Testing Laboratory
   a. Name, address, and telephone number.
   b. Name of Registered Engineer and responsible officer.
   c. Certification of testing laboratory.
   d. Qualifications.

2. Schedule of tests
   a. Reference to Specification section.
   b. Description of test and applicable standards.

3. Submit two (2) copies of each report

1.03 LIMITATIONS OF AUTHORITY OF INDEPENDENT LABORATORY

A. Independent laboratory is not authorized to:
   1. Approve or accept any portion of the Work.
   2. Assume or perform duties of the Contractor.
   3. Stop Work.

1.04 CONTRACTOR RESPONSIBILITIES

A. Inspections, tests, and similar quality control services are the Contractor's responsibility; these services also include those specified to be performed by an independent laboratory and not directly by the Contractor.

B. Employ and pay an independent laboratory or other qualified agency to perform quality control services specified.

C. Cooperate with independent laboratory(ies) performing required inspections, tests, and similar services. Notify the independent laboratory no less than 24 hours in advance of scheduling of tests.

D. Provide such auxiliary services as requested. These auxiliary services include, but not limited to:
   1. Providing access to the Work.
   2. Taking samples or assistance with taking samples.
   3. Delivery of samples to test laboratories.
   4. Security and protection of samples and test equipment at the project site.

E. Contractor and each independent laboratory shall coordinate the sequence of their activities to minimize delay in progress of the Work.

F. Contractor and each independent laboratory shall coordinate their Work to avoid removing or replacing work to accommodate inspections and tests. Contractor shall be responsible for scheduling times for inspections, tests, taking samples, and similar activities.

G. Inspections and tests required by codes or ordinances, or by a plan approval authority, and made by a legally constituted authority, shall be the responsibility of and shall be paid for by the Contractor.

1.05 RETEST RESPONSIBILITIES AND CONVENIENCE TESTING

A. Where results of inspections, tests, or similar services prove unsatisfactory and don not indicate compliance with requirements of the Contract Documents, repeats of the inspections, tests, or similar services shall be conducted following revision or replacement of the affected Work.

B. Cost of repeat inspections, tests, or similar services shall be the Contractor's responsibility, regardless of responsibility or original inspection, test, or similar service.

C. Cost of inspections, tests, or similar services performed exclusively for the Contractor's convenience, shall be the sole responsibility of the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

A. General provisions of Contract, including General and Supplementary Conditions.

1.02 SECTION INCLUDES

A. Administrative and procedural requirements governing the Contractor's selection of products for use in the project.

B. Administrative and procedural requirements for handling requests for substitutions.

C. Requirements for product list submittal.

1.03 SUBSTITUTION REQUESTS

A. Submit a separate request for each proposed substitution; original signature sets in accordance with shop drawings Section 01340, each on form bound into Project Manual. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.

1. Designate Specification section and Article number.

2. Identify manufacturer by name and address, trade name, model number or catalog number.

3. List product description, performance and test data, applicable reference standards, availability of maintenance service and source of replacement materials.

4. Give itemized comparison of qualities of proposed substitution with specified product, changes required in other elements of the Work due to substitution and effect on progress schedule.

5. Give name and address of similar projects on which product was used and date of installation.

6. Provide cost data comparing proposed substitution with specified product and state the amount of net change to Contract Price.

B. During Bidding period, times for submittal of substitution requests are stated in the Instructions to Bidders.

C. After Bidding period, up to thirty (30) days after date of Notice to Proceed, Engineer will consider written requests from Contractor for proposed substitutions of products. Subsequent requests will be considered only in case of product unavailability or other condition beyond control of the Contractor.

D. Do not order or install substitute products without written acceptance from the Engineer. Do not imply or indicate substitutions on shop drawings or product data submittals without a separate formal request.

E. Engineer will determine acceptability of substitution. The burden of proof of acceptability of a proposed substitution is upon the Contractor; information submitted must demonstrate that characteristics of the proposed substitution are equal to or better than those of the specified product. Only one request for substitution for each product will be considered. If not accepted, Contractor shall provide specified product.

F. Request for substitution constitutes a representation that the Contractor:

1. Has investigated the proposed product and determined that it is equal to or superior in all respects to the specified product.

2. Will provide same or greater warranties for proposed product as for the specified product.

3. Will coordinate installation of substitution accepted into the Work and make other changes and adjustments as may be required to make the Work complete in all respects.

4. Waives all claims for additional costs due to substitution which may later become apparent.

5. Agrees to reimburse the Owner for the additional service charges of the Engineer and their Consultants for evaluation and review of the proposed substitution.

1.04 PRODUCT LIST

A. Prepare the product listing schedule with information on each item tabulated under the following column headings:

1. Related Specification section number.

2. Generic name used in Contract Documents.

3. Proprietary name, model number and similar designations.

4. Manufacturer's and name and address.

5. Supplier's name and address.

6. Installer's name and address.

7. Projected delivery date, or time span of delivery period.

B. Within fifteen (15) days after date of Notice to Proceed, submit five (5) copies of product list schedule. Provide a written explanation for omissions of data, and for known variations from Contract requirements.

C. The Engineer will respond in writing to the Contractor, within 30 days of receipt of the completed product list schedule. No response within this time period constitutes no objection to listed manufacturers or products, but does not constitute a waiver of the requirement that products comply with Contract Documents.

1.05 QUALITY ASSURANCE

A. To the fullest extent possible, provide products of the same kind, from a single source.

B. When the Contractor is given the option of selecting between two (2) or more products for use on the project, the product selected shall be compatible with products previously selected, even if previously selected products were also options.

C. Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view in occupied spaces or on the exterior.

1. Locate required product labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface that is not conspicuous.

2. Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface which is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.

b. Model and serial number.

c. Capacity.

d. Speed.

e. Ratings.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store and handle products in accordance with the manufacturer's recommendations, using means and methods that will prevent damage, deterioration and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other losses.

B. Deliver products to the site in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting and installing.

C. Inspect products upon delivery to ensure compliance with the Contract Documents, and to ensure that products are undamaged and properly protected.

D. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

E. Store heavy materials away from the project structure in a manner that will not endanger the supporting construction.

F. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.01 PRODUCT SELECTION

A. Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, unused at the time of installation.

1. Provide products complete with all accessories, trim, finish, safety guards and other devices and details needed for a complete installation and for the intended use and effect.

2. Where available, provide standard products, which meet the specified requirements, of types that have been produced and used successfully in similar situations on other projects.

B. Product selection is governed by the Contract Documents and governing regulations, not by previous project experience. Procedures governing product selection include the following:

1. Where only a single source product or manufacturer is named, provide the product indicated or submit a request for substitution for any product or manufacturer not named.

2. Where two (2) or more sources of products or manufacturers are named, provide one (1) of the products indicated or submit a request for substitution for any product or manufacturer not named.

3. Where Specifications describe a product or assembly, listing exact characteristics required, without use of a brand or trade name, provide any product or assembly that provides the characteristics and otherwise complies with Contract requirements.

4. Where Specifications require compliance with performance requirements, provide any products that comply with the specified requirements.

5. Where the Specifications only require compliance with an imposed code, standard or regulation, select a product that complies with the standards, codes or regulations specified.

6. Where Specifications require matching an established Sample, the Engineer's decision will be final on whether a proposed product matches satisfactorily.

7. Where specified product requirements are indicated to be selected from manufacturer's standard colors, patterns, textures, or similar condition, select a product and manufacturer that complies with other specified requirements. The Engineer will select the color, pattern and texture from the product line selected.

8. The description of specific qualities takes precedence over specified reference standards. The description of specific qualities and specified reference standards together take precedence over the named products of designated manufacturers.

C. Source Manufacturers:

1. Primary source products and manufacturers named in a Specification section are listed as standards of quality to which other products will be compared.

2. Additional source manufacturers named in a specification are those manufacturers considered by the Engineer as generally capable of

manufacturing products which may conform to the specified requirements. However, their being listed does not guarantee or imply that any or all of their products will be considered as equal to the specified requirements.

PART 3 - EXECUTION

3.01 MANUFACTURER'S INSTALLATION INSTRUCTIONS

A. When Contract Documents require installation of Work to comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to all parties involved in the installation, including copies to the Engineer.

B. Handle, install, connect, condition, clean, and adjust products in accordance with such instructions and in conformance with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instructions, notify Engineer for additional instructions.

C. Do not omit preparatory steps or installation procedures unless specifically modified or exempted by Contract Documents.

D. Do not proceed with work without clear instructions.

SUBSTITUTION REQUEST

PROJECT:_____DATE:_____
TO: SCS ENGINEERS
5850 South Semoran Blvd.
Orlando FL 32803

FROM:__CONTRACTOR __BIDDER __SUPPLIER __MANUFACTURER

HEREBY REQUESTS ACCEPTANCE OF THE FOLLOWING PRODUCT OR SYSTEMS AS A SUBSTITUTION IN ACCORD WITH PROVISIONS OF DIVISION ONE OF THE SPECIFICATIONS:

1. SPECIFIED PRODUCT OR SYSTEM:
   Generic Description: _____ Specification Section No. _____ Art. ___ Para._

2. SUPPORTING DATA:
   ___Product data for proposed substitution is attached (description of product, reference standards, performance and test data).

   ___Sample attached. __Sample will be sent if requested.

3. PRODUCT OR SYSTEM QUALITY COMPARISON:

	Specified Product	Substitution
Name, brand:	_____	_____
Catalog No.:	_____	_____
Manufacturer:	_____	_____
Vendor:	_____	_____
Significant variations:	_____	_____

   _____Maintenance Service Available Locally: __Yes __No
   Spare Parts Source:_____

4. EFFECT OF SUBSTITUTION:
   Affects other parts of work: __No__Yes
   Explain:_____
   Substitution changes Contract Time: Add/Deduct ___days.
   Saving or credit to Owner if accepted: $_____.
   Extra cost to Owner if accepted: $_____.

5. PREVIOUS INSTALLATIONS:
   Attach list of local similar projects on which proposed substitution was used and dates of installations.

6. STATEMENT OF CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT REQUIREMENT: I/we have investigated the proposed substitution and:
   a. believe that it is equal or superior in all respects to specified product, except as stated above; and
   b. will provide the same warranty as specified for specified product; and

c. have included complete cost data and implications of the substitution; and
d. will pay redesign and special inspection costs caused by the use of this product; and
e. will pay additional costs to other contractors caused by the substitution; and
f. will coordinate the incorporation of the proposed substitution in the Work; and
g. will modify other parts of the work as may be needed, to make all parts of the Work complete and functioning; and
h. waive future claims for added cost to Contract caused by the substitution; and
i. agree to pay to the Owner or Engineer the hourly rate of **One Hundred Fifteen Dollars ($136.00)** per hour for cost of Engineer to evaluate and review the proposed substitution.

Name and Title:_____Date_____

Signature:_____

ENGINEER'S REVIEW AND ACTION:

__Substitution not accepted:
__Resubmit with additional information:
__Substitution is accepted.
__Substitution is accepted, with the following comments:

By: _____Date:_____

OWNER'S ACCEPTANCE:

__Substitution is accepted.
__Substitution is accepted, with the following comments:

By:_____ Date:_____

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work: Comply with requirements stated in Conditions of the Contract and in specifications for administrative procedures in closing out the Work.

B. Related Work Described Elsewhere:

1. Conditions of the Contract. Fiscal provisions, legal submittals and additional administrative requirements.

2. Project Record Documents: Section 01720

3. The respective sections of specifications: Closeout Submittals Required of Trades.

1.02 SUBSTANTIAL COMPLETION (BENEFICIAL OCCUPANCY)

A. When Contractor considers the Work as substantially complete, he shall submit to Engineer:

1. A written notice that the Work, or designated portion thereof, is substantially complete.

2. A list of items to be completed or corrected.

B. Within a reasonable time after receipt of such notice, Engineer shall make an inspection to determine the status of completion.

C. Should Engineer determine that the Work is not substantially complete:

1. The Engineer will promptly notify 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 Engineer.

3. Engineer will re-inspect the Work.

D. When Engineer finds that the Work is substantially complete, he will:

1. Prepare and deliver to Owner a tentative Certificate of Substantial Completion on form provided herein, with a tentative list of items to be completed or corrected before final payment.

2. After consideration of any objections made by Owner as provided in Conditions of the Contract, and when Engineer considers Work substantially complete, he will execute and deliver to Owner and Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.03 FINAL INSPECTION

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.

4. Work is completed and ready for final inspection.

B. The Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.

C. Should Engineer consider that the Work is incomplete or defective:

1. Engineer 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 Engineer that the Work is complete.

3. The Engineer will re-inspect the Work.

D. When the Engineer finds that the Work is acceptable under the Contract Documents, he shall request the Contractor to make closeout submittals.

1.04 REINSPECTION FEES

A. Should the Engineer perform re-inspections due to failure of the Work to comply with the claims of status of completion made by Contractor:

1. Owner will compensate the Engineer for such additional services.

2. Owner will deduct the amount of such compensation from the final payment to the Contractor.

1.05 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER

A. Evidence of compliance with requirements of governing authorities.

B. Project Record Documents: To requirements of Section 01720.

C. Evidence of Payment and Release of Liens: To requirements of General and Special Conditions.

D. Certificate of Insurance for Products and Completed Operations.

1.06 FINAL ADJUSTMENT OF ACCOUNTS

A. Submit a final statement of accounting to the Engineer.

B. Statement shall reflect all adjustments to the Contract Sum:

1. The original Contract Sum.

2. Additions and deductions resulting from:

a. Previous change orders or written amendment.

b. Allowances.

c. Unit prices.

d. Deductions for uncorrected Work.

e. Penalties and bonuses.

f. Deductions for liquidated damages.

g. Deductions for re-inspection payments.

h. Other adjustments.

3. Total Contract Sum, as adjusted.

4. Previous payments.

5. Sum remaining due.

C. Engineer 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.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Maintain at the site for the Owner one record copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications of the Contract Documents.
5. Engineer's Field Orders or written instructions.
6. Approved shop drawings, working drawings and samples.
7. Field test records.
8. Construction photographs.

B. Related Requirements Described Elsewhere:

1. Shop Drawings, Working Drawings, And Samples: Section 01340
2. Progress Schedules: General Conditions

1.02 MAINTENANCE OF DOCUMENTS AND SAMPLES

A. Store documents and samples in Contractor's field office apart from documents used for construction.

1. Provide files and racks for storage of documents.
2. Provide locked cabinet or secure storage space for storage of samples.

B. File documents and samples in accordance with CSI format with section numbers as provided herein.

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

D. Make documents and samples available at all times for inspection by the Engineer.

E. As a prerequisite for monthly progress payments, the Contractor is to exhibit the currently updated "Record Documents" for review by the Engineer and Owner.

1.03 MARKING DEVICES

A. Provide felt tip marking pens for recording information in the color code designated by the Engineer.

1.04 RECORDING

A. Label each document "PROJECT RECORD" in neat large printed letters.

B. Record information concurrently with construction progress.

1. Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction:

1. Depths of various elements of foundation in relation to finish first floor datum.

2. Horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements. Actual installed pipe material, class, etc.

3. Location of internal utilities and appurtenances concealed in the construction, referenced to visible and accessible features of the structure.

4. Field changes of dimension and detail.

5. Changes made by Field Order or by Change Order.

6. Details not on original contract drawings.

7. Structure and piping relocations.

D. 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.

E. Shop Drawings (after final review and approval): Provide two (2) sets of record drawings for each process equipment, piping, electrical system and instrumentation system.

1.05 SUBMITTAL

A. At Contract closeout, deliver record documents to the Engineer for the Owner.

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.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Scope of requirements:

1. Compile specified warranties and bonds as specified in these Specifications.
2. Co-execute submittals when so specified.
3. Review submittals to verify compliance with Contract Documents.
4. Submit to Engineer for review and transmittal to Owner.

B. Related Work Described Elsewhere:

1. Instructions to Bidders: Bid Bonds
2. Conditions of the Contract: Performance Bond and Payment Bond
3. Conditions of the Contract: Instructions to Contractors
4. Contract Closeout: Section 01700

1.02 SUBMITTAL REQUIREMENTS

A. Assembly warranties, bonds and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.

B. Number of original signed copies required: Two each.

C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.

1. Product of Work item.
2. Firm, with name of principal, address and telephone number.
3. Scope.
4. Date of beginning of warranty, bond or service and maintenance contract.

5. Duration of warranty, bond or service maintenance contract.

6. Provide information for Owner's personnel:

   a. Proper procedure in case of failure.

   b. Instances which might affect the validity or warranty or bond.

7. Contractor, name of responsible principal, address and telephone number.

1.03 FORM OF SUBMITTALS

A. Prepare in duplicate packets.

B. Format:

1. Size 8-1/2 inches x 11 inches, punch sheets for standard three-post binder.

   a. Fold larger sheets to fit into binders.

2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS".

   List:

   a. Title of project.

   b. Name of Contractor.

C. Binders: Commercial quality, three-post binder, with durable and cleanable plastic covers and maximum post width of two inches.

1.04 WARRANTY SUBMITTALS REQUIREMENTS

A. For all major pieces of equipment, submit a warranty from the equipment manufacturer. Manufacturer's warranty period shall be concurrent with Contractor's for one (1) year, unless otherwise specified, commencing at the time of final acceptance by Owner. Certain materials will require a longer term warranty. These limits will be designated in the specification for those materials.

B. Contractor shall be responsible for obtaining certificates for equipment warranty for all major equipment which lists for more than $1,000. Engineer reserves the right to request warranties for equipment not classified as major. Contractor shall still warrant equipment not considered to be "major" in the Contractor's warranty period even though certificates of warranty may not be required.

C. In the event that the equipment manufacturer or supplier is unwilling to provide a warranty commencing at the time of Owner acceptance, the Contractor shall obtain from the manufacturer a two (2) year warranty commencing at the time of equipment delivery to the job site. This two-year warranty from the manufacturer shall not relieve Contractor of the one-year warranty starting at the time of Owner acceptance of the equipment.

D. Owner shall incur no labor or equipment cost during the guarantee period.

E. Guarantee shall cover all necessary labor, equipment and replacement parts resulting from faulty or inadequate design, improper assembly or erection, defective workmanship and materials, leakage, breakage or other failure of all equipment and components furnished by manufacturer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 02065

DEMOLITION

PART 1 - GENERAL

1.01 GENERAL

A. Furnish all labor, equipment, and incidentals to demolish and dispose of steel plates and concrete where shown on the Contract Drawings.

B. Demolition efforts shall be staged as specified herein and stated on the Contract Drawings.

1.02 SUBMITTALS

A. Schedule of demolition activities indicating the following:

1. Detailed sequence of demolition and removal Work with starting and ending dates for each activity.

1.03 QUALITY ASSURANCE

A. Regulatory requirements

1. Comply with hauling and disposal regulations of authorities having jurisdiction.

2. Comply with governing Florida Fire Code, Florida Administrative Code, Code of Federal Regulations, EPA and OSHA regulations before beginning demolition.

1.04 SCHEDULING

A. Arrange demolition schedule so as not to interfere with Owner's on-site operations.

B. Demolition shall be staged to allow one-half of facility to remain in operation at all times, and to allow for sanitation truck staging in front of the construction area.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

A. Ensure that all utilities in vicinity of Work have been shut off and/or disconnected as required.

B. The extent of demolition Work, as indicated in the Contract Drawings, includes:

1. Steel plate and edges.

2. Steel plate anchoring system.

3. Strip brush and mounting brackets.

4. Remove loose exposed concrete wall surfaces to indicated depths and clean by shot blasting, milling, and/or sandblasting. Leave exposed surface rough with approximately ¼" amplitude. Do not feather edges of existing concrete.

5. Remove strip of tipping floor concrete at base of section of steel plate to indicated depths.

C. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people and transfer station trailers around demolition area.

1. Erect temporary protection, such as walks, fences, and railings, where required by authorities having jurisdiction.

2. Protect existing site improvements and appurtenances to remain.

3. Promptly repair damages caused to adjacent facilities or structures by demolition operations at no cost to Owner.

D. Disposal of demolished materials:

1. Remove from site debris, rubbish, and other materials resulting from demolition operations.

2. Transport materials removed and legally disposed of offsite in a manner that prevents spillage on streets or adjacent areas. Contractor is responsible to pay any fees associated with disposal.

E. Cleaning:

1. Debris and rubbish shall be removed daily from the tipping floor and transfer trailer tunnel.

2. Contractor shall be responsible for collection of windblown debris.

END OF SECTION

SECTION 03310

CONCRETE

PART 1 - GENERAL

1.01 DESCRIPTION

A. This Specification includes concrete requirements for tipping floor repair (including filling of core testing voids) and concrete grout for wall repair.

B. Furnish all labor, materials, equipment and incidentals required to place high-strength microsilica modified Portland cement concrete topping, concrete grout, forms, and miscellaneous related items.

C. Concrete operation shall be staged or sequenced as specified herein and/or stated on the Drawings.

1.02 REFERENCE STANDARDS

A. American Concrete Institute:

1. ACI 212.1R - Admixtures for Concrete
2. ACI 2122.2 - Guide for Use of Admixtures for Concrete
3. ACI 301 - Specifications for Structural Concrete.
4. ACI 305 - Hot Weather Concreting.
5. ACI 306.1 Standard Specification for Cold Weather Concreting.
6. ACI 318 - Building Code Requirements for Structural Concrete.
7. ACI 318M - Metric Building Code Requirements for Structural Concrete.
8. ACI 503R - Use of Epoxy Compounds with Concrete
9. ACI 503.2 - Standard Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive

B. American Society for Testing and Materials:

1. ASTM A820 - Standard Specification for Steel Fibers for Fiber-Reinforced Concrete.
2. ASTM C31 - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
3. ASTM C33 - Standard Specification for Concrete Aggregates.
4. ASTM C94 - Standard Specification for Ready-Mixed Concrete.
5. ASTM C150 - Standard Specification for Portland Cement.
6. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
7. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.

8. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
9. ASTM C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.
10. ASTM C882 - Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear.
11. ASTM C 920 - Standard Specifications for Elastomeric Joint Sealants.
12. ASTM C1017 - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
13. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
14. ASTM D570 - Standard Test Method for Water Absorption of Plastics.
15. ASTM D638 - Standard Test Method for Tensile Properties of Plastics.
16. ASTM D695 - Standard Test Method for Compressive Properties of Rigid Plastics.
17. ASTM D695M - Standard Test Method for Compressive Properties of Rigid Plastics (Metric).
18. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
19. ASTM D1190 - Standard Specification for Concrete Joint Sealer, Hot-Applied Elastic Type.
20. ASTM D 1752 - Standard Specifications for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.03 QUALITY ASSURANCE

A. The actual acceptance of aggregates and development of mix proportions to produce concrete conforming to the specific requirements shall be determined prior to the placement of concrete. The microsilica modified Portland cement concrete mix presented in Part 2.08 is intended to be a guide only and does not relieve the Contractor of his responsibility to provide mix design, laboratory test results, to the Owner/Engineer for review and approval.

B. Conform to the requirements of the latest edition of ACI 301 for concrete mixing and placing of concrete unless noted in other sections of this Specification.

C. Contractor shall submit documented evidence from a minimum of three (3) projects demonstrating experience with reinforced concrete construction, specifically "tipping floor" or "push floor" wearing surface or similar slab construction and microsilica modified Portland cement concrete placement and finishing, to illustrate to the Owner/Engineer that Contractor has the competence, expertise, and reliability to perform the work in an acceptable manner and complete the work as required by the Drawings and these Specifications.

PART 2 - PRODUCTS

2.01 CEMENT:

A. Microsilica modified Portland cement concrete and Concrete grout shall be Portland cement, ASTM C - 150, Type I or II.

2.02 FINE AND COARSE AGGREGATES:

A. ASTM C33.

2.03 WATER:

A. Potable, clean and not detrimental to concrete.

2.04 ADMIXTURES:

A. Air Entraining ASTM C260, ASTM C494 Type F - Water Reducing, High Range, Type G - Water Reducing, High Range, and Retarding and/or other admixtures may be permitted subject to written approval by the Engineer. Calcium chloride based admixtures will not be permitted.

2.05 CONCRETE REINFORCING FIBERS (high-strength microsilica):

A. Steel fibers shall conform to the requirements of ASTM A820. The classification of steel fibers shall be Type I cold drawn, deformed steel wire specifically engineered for secondary reinforcement of concrete and having a minimum tensile strength of 100,000 psi. Wires shall be a minimum of 2-inches in length and have an equivalent diameter of 0.035 inches. Submit manufacturer's data for approval of the Engineer.

2.06 FIBER-REINFORCED CONCRETE (high-strength microsilica):

A. Fiber reinforced Portland cement concrete topping shall conform to the requirements of ASTM C1116 for Type I Steel Fiber-Reinforced Concrete with stainless steel fibers. Submit mix design for approval of Engineer.

2.07 BONDING AGENT:

A. Two component modified epoxy resin conforming to ASTM Designation: C 881, Type I, II, IV, and V, Grade 1, Class B & C such as Prime Bond 3900 High Mod LPL; manufactured by Prime Resins, Inc., 2381 Rockaway Ind. Blvd., Conyers, GA 30012, (800) 321-7212, http://www.primeresins.com or approved equal.

B. Substitution requests must be accompanied by (a) a certificate of compliance from an approved independent testing laboratory that the proposed substitute product meets or exceeds the specified performance criteria, tested in accordance with the

specified test standards; and (b) documented proof that the proposed substitute product has a 3 - year proven record of performance of bonding plastic Portland cement mortar/concrete to hardened Portland cement mortar/concrete, confirmed by actual field tests and 3 successful installations that the Owner/Engineer can investigate.

C. Performance Criteria:

1. Properties of the mixed epoxy resin adhesive:

Mix Ratio:	(A:B)	2:1
Pot Life:	60 gram mass @ 73 deg. F	2 hours
	1 gallon mass @ 73 deg. F	56 Min.
Tack free:	@ 20 Mils, 73 deg. F	6 hours
Viscosity:		600 cps
Color:		Amber (clear)

2. Properties of the cured epoxy resin adhesive:

Compressive Strength:	(ASTM D - 695)	10,530 psi
Compressive MOE:	(ASTM D - 695)	3.38×10^5
Tensile Strength:	(ASTM D - 638)	7,220 psi
Tensile MOE:	(ASTM D - 638)	3.32×10^5
Bond Strength:	(ASTM C - 882)	2 - day 2,547 psi 14 - day 2,833 psi
Elongation:		3 %
Shore Hardness	(D Scale)	85
Water Absorption:	(ASTM D - 570)	<1%

D. Materials:

1. Epoxy Resin Adhesive:

a. Component "A" shall be a modified resin of the epichlorohydrin bisphenol A type containing suitable viscosity control agents.

b. Component "B" shall be primarily a reaction product of a selected amine blend with an epoxy resin of the epichlorohydrin bisphenol A type containing suitable control agents and accelerators.

c. The ratio of Component "A" to "B" shall be 2:1.

d. The material shall not contain asbestos.

2.08 CONCRETE TOPPING (high-strength microsilica):

A. High strength aggregate concrete shall be produced with substantial conformance to the following approximate proportions per cubic yard that are presented herein as a guide only:

Portland Cement Type I or II	700 lb
Silica-Fume	70 lb
Iron Mountain Traprock or granite aggregate with equivalent abrasion characterized to Traprock (max. size 3/8")	1,800 lb
Sand	1,180 lb
Water	245 lb
Superplastisizer (6" slump)	Manufacturer's recommendation
Steel Fibers	50 lb
Minimum 28-day strength	$f'_c \geq 8{,}000$ psi.

B. The water/cementitious material ratio shall not exceed 0.32.

2.09 CONCRETE (Grout):

A. Non-Shrink, non-corrosive, non-staining concrete grout:

Portland Cement Type I or II with tricalcium aluminate content not to exceed 8 percent

Minimum 28-day strength $f'_c \geq 3{,}000$ psi.

PART 3 - EXECUTION

3.01 SURFACE PREPARATION

A. All surfaces of existing concrete to receive new microsilica modified Portland cement concrete topping (tipping floor) or concrete grout (wall) shall be thoroughly cleaned by one of the following abrading methods subject to approval by the Owner/Engineer and local Regulatory Agencies (Contractor is responsible for all regulatory permits related to the cleaning process):

1. Sandblasting with common sands, silica sands, or metallic sands as the primary abrading tool,

2. Shotblasting, or

3. High-pressure waterblasting with or without abrasives.

3.02 CLEANING

A. Following the abrasive cleaning, the existing concrete surface(s) shall be thoroughly washed to remove all residuals from the abrasive cleaning process and allowed to dry to manufacturer's specifications prior to placing bonding agent.

B All surfaces shall be clean, sound, free of dust, oil, or other deleterious material at time of placement of epoxy bonding agent and microsilica modified Portland cement concrete topping.

3.03 EPOXY BONDING

A. An epoxy bonding agent recommended by the manufacturer for the intended use and approved by the Owner/Engineer shall be applied per manufacturer's specifications prior to placement of any microsilica modified Portland cement concrete topping or concrete grout. Epoxy bonding adhesive shall be Master Builders Concresive as shown in ASTM C881 for the intended use, or equal.

B. Epoxy bonding adhesive shall be prepared and applied in strict compliance to Manufacturer's specifications and recommendations.

Cleaning:

a. The uncured epoxy resin adhesive can be cleaned from tools with an approved solvent. The cured epoxy resin adhesive can only be removed mechanically.

b. Leave the finished Work area in a neat, clean, safe condition without evidence of spillovers onto adjacent areas.

3.04 PLACEMENT OF PORTLAND CEMENT CONCRETE

A. Unsound Portland cement concrete, unsound epoxy concrete patches, and all concrete patches shall be removed from the existing concrete slab surface or walls. The Contractor shall demonstrate to the Owner/Engineer the soundness of all remaining concrete to receive concrete overlay prior to applying epoxy bonding agent.

B. Equipment and tools shall not be used to remove unsound concrete, which, in the opinion of the Engineer, will cause the removal of excess quantities of sound concrete along with the unsound concrete. Concrete removal may be done by abrasive blast cutting, abrasive sawing, impact tool cutting, machine rotary abrading, or by other methods subject to the Engineer's approval. Cut areas shall be cleaned free of dust and all other loose and deleterious materials by brooming, abrasive blast cleaning, and high pressure air jets. Equipment shall be fitted with suitable traps, filters, drip pans, or other devices to prevent oil or other deleterious

matter from being deposited on the concrete surface to receive the epoxy bonding agent, microsilica modified Portland cement concrete topping or concrete grout.

C. After the removal of unsound concrete has been completed, existing reinforcing steel, which may have been exposed, shall be restored to position and blocked and tied securely in place to the Engineer's satisfaction.

D. Any reinforcing steel that has been damaged to the extent that the steel's usefulness is destroyed as a result of the Contractor's operations shall be repaired or replaced by the Contractor as directed by the Engineer at the Contractor's expense.

E. Immediately prior to applying the epoxy bonding agent, the concrete surface to receive the topping shall be dry and blown clean by compressed air to remove accumulated dust and any other loose material. If the surface becomes contaminated at any time prior to placing the bonding agent, microsilica modified Portland cement concrete topping or concrete grout, the surface shall be cleaned by abrasive blasting. The surface temperature of the areas to be covered shall be 40° F (4° C) or above when the epoxy bonding agent and the microsilica modified Portland cement concrete topping are applied/placed. Methods proposed to heat said surfaces are subject to approval by the Engineer.

F. The epoxy bonding agent shall be applied to existing concrete surfaces pursuant to manufacturer's recommendations prior to placing the mircosilica modified Portland cement concrete topping or concrete grout.

G. Microsilica modified Portland cement concrete topping or concrete grout shall not be retempered.

H. Contractor to provide means and methods to place concrete grout between new steel plate and prepared existing wall. When placing concrete grout on walls, the Contractor shall provide a flow controlled modified material.

I. No traffic shall be permitted on the new microsilica modified Portland cement concrete topping until at least seven (7) days after final set and then only after the Engineer's approval.

J. The surface of the microsilica modified Portland cement concrete topping shall be textured by brooming with a stiff bristled broom or by other suitable devices that will result in uniform scoring. Brooming shall be performed transverse to traffic. See Section 3.08 below.

K. Finished surfaces of the microsilica modified Portland cement concrete topping shall not vary more than 3/16 inch (4.8mm) from the lower edge of a 10 ft. (3.0m) straightedge placed in any direction.

L. Saw cut at the interface of microsilica modified Portland cement concrete topping surface to existing concrete slab where no mechanical edge device exists. A 3 1/2 inch deep sawcut shall be made and existing concrete shall be removed. New microsilica modified Portland cement concrete topping required to be flush with the existing adjoining surface at the interface. Do not feather the microsilica modified Portland cement concrete topping.

3.05 JOINTS (high-strength microsilica):

A. All efforts shall be made to avoid cold joints. The Contractor shall schedule an appropriate crew and coordinate with the supplier to ensure no cold joints are made.

B. Construction joints shall only be placed if approved by the Engineer, and then only at designated locations.

3.06 FINAL GRADE (high-strength microsilica):

A. The finish grades shall conform to those shown on the Drawings and shall not vary by 3/16" within 10 feet in any direction.

3.07 CONSOLIDATING CONCRETE

A. Concrete grout to be consolidated using mechanical vibrators supplemented with hand rodding and tamping so that concrete grout is worked around reinforcement and embedded items into all parts of forms.

B. Use of Vibrators: Vibrators shall be inserted and withdrawn at points approximately 18 inches apart. The duration of each insertion shall be from 5 to 15 seconds.

3.08 CONCRETE FINISH (high-strength microsilica):

A. Microsilica modified Portland cement concrete topping shall receive a steel trowel finish without local depressions or high points.

B. Microsilica modified Portland cement concrete topping shall receive a floated finish prior to steel trowelling.

C. Floated Finish: After microsilica modified Portland cement concrete topping has been placed, consolidated, struck off and leveled, it shall not be worked further until water sheen has disappeared and the surface has hardened sufficiently to permit floating. The planeness of the topping shall be checked frequently with a 10 foot straightedge applied at no less than two angles approximately 90 degrees apart. The topping shall then be refloated to a uniform smooth texture.

D. Troweled Finish: After floating, microsilica modified Portland cement concrete topping shall be power troweled and finally hand troweled. The first troweling after power floating shall produce a smooth surface, relatively free of defects. Surfaces shall be hand troweled after the surface has hardened sufficiently. Hand troweling shall produce a surface that is thoroughly consolidated, free from trowel marks, uniform in texture and appearance and plane.

E. Broom Finish: After hand troweling, a stiff steel bristle broom finish shall be applied to all microsilica modified Portland cement concrete surfaces.

F. Finishing Tolerance: Surfaces shall be true planes within the following limits:

1. 3/16 inch in 10 feet as determined by a 10-foot straightedge placed anywhere on the slab in any direction.

3.09 CURING AND PROTECTION (high-strength microsilica):

A. Protect all microsilica modified Portland cement concrete Work against damage from elements and defacement of any nature during construction operations.

B. Upon initial set, microsilica modified Portland cement concrete surfaces shall be fogged to ensure a continuous water cure. Fogging shall continue until wet burlene cure can be implemented. Microsilica modified Portland cement concrete topping shall be continuous wet burlene cured for a period not less than seven (7) days after final set.

C. Microsilica modified Portland cement concrete topping surfaces shall be protected from the direct rays of the sun to prevent checking and crazing.

3.10 FIELD TEST (high-strength microsilica):

A. One set of two (2) control cylinder specimens shall be taken for entire batch of microsilica modified Portland cement concrete topping placed. No less than one set of cylinders shall be taken per day. One slump test shall be performed for each set of cylinders taken. All specimens shall be taken in conformance with ASTM C31. One cylinder shall be tested at seven (7) days, the second at 28 days unless otherwise directed by Engineer.

B. The Contractor shall engage an independent concrete testing laboratory approved by the Owner to provide services as stated in Section 3.10.A above. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities for Contractor's testing agencies. The Contractor shall cooperate in making of such tests to the extent of allowing free access to the Work for the selection of samples.

C. The Contractor shall engage a testing agency to test the bond between the microsilica modified Portland cement concrete topping and the existing concrete

base slab. Provide one test for every section of repaired slab or as directed by Engineer. Where tests result in failure of the epoxy bond interface between concrete layers or the microsilica modified Portland cement concrete topping (i.e. the existing base slab concrete should fail before the epoxy joint or the microsilica modified Portland cement concrete topping), the Contractor, at his own expense, shall:

1. Perform sufficient additional tests to define the area of failure.

2. Remove the microsilica modified Portland cement concrete topping and bonding agent from the failure area.

3. Apply new bonding agent and microsilica modified Portland cement concrete topping as directed by the Engineer.

D. The following is an acceptable test procedure for testing the bond between the microsilica modified Portland cement concrete topping and the existing concrete slab:

1. Acceptance of bonded concrete overlay placement shall be evaluated in accordance with the following criteria:

a. Sounding and visual inspections shall indicate a sound bond between microsilica modified Portland cement concrete topping and existing concrete and there shall be no excessive cracking in any area of the floor.

b. Results of compressive strength tests of microsilica modified Portland cement concrete cylinders shall satisfy the requirements specified herein.

2. Other surface soundness and adhesion test methods may be used subject to documented evidence of equivalence and written approval by the Owner.

3.11 FIELD TEST (Concrete grout):

A. One set of two (2) control cylinder specimens shall be taken for entire batch of Portland cement concrete grout placed. No less than one set of cylinders shall be taken per day. One slump test shall be performed for each set of cylinders taken. All specimens shall be taken in conformance with ASTM C31. One cylinder shall be tested at seven (7) days, the second at 28 days unless otherwise directed by Engineer.

B. The Contractor shall engage an independent concrete testing laboratory approved by the Owner to provide services as stated in Section 3.11.A above. The Contractor is responsible for scheduling times for inspections, tests, taking samples and similar activities for Contractor's testing agencies. The Contractor

shall cooperate in making of such tests to the extent of allowing free access to the Work for the selection of samples.

END OF SECTION

SECTION 05500

METAL FABRICATIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Execution requirements for embedded anchors in concrete, attachments for metal fabrications, etc. specified by this Section.

1.02 SUBMITTALS

A. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners and accessories of metal fabrications.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Accept metal fabrications on site in labeled shipments. Inspect for damage.

B. Protect metal fabrications from damage by exposure to weather.

1.04 FIELD MEASUREMENTS

A. Verify field measurements are as indicated on shop drawings and/or instructed by manufacturer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Steel Plates, Shapes and Bars: ASTM A36/A36M.

B. Fasteners: anchor rods, threaded rods, bolts, nuts: ASTM A36.

C. Welding Materials: AWS D1.1; type required for materials being welded.

D. Provide materials with smooth, flat surfaces without blemishes.

E. Adhesive anchoring system: Hilti Hit HY 150 MAX SD

2.02 FABRICATION

A. Fit and ship assembled items in largest practical sections for delivery to project.

B. Fabricate items with joints tightly fitted and secured.

C. Continuously seal joined members in the field by continuous welds.

D. Grind exposed welded joints and anchor rod connections flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush and hairline. Ease exposed edges to small uniform radius.

2.03 FACTORY APPLIED FINISHES - STEEL

A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.

B. Do not prime surfaces in direct contact with concrete or where field welding is required.

C. Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a dry film thickness of not less than 1.5 mils. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.04 FABRICATION TOLERANCES

A. Squareness: 1/8 inch maximum difference in diagonal measurements.

B. Maximum Offset Between Faces: 1/16 inch.

C. Maximum Misalignment of Adjacent Members: 1/16 inch.

D. Maximum Bow: 1/8 inch in 48 inches.

E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify field conditions are acceptable and are ready to receive Work.

3.02 PREPARATION

A. Clean and strip steel items to bare metal where site welding is required.

3.03 FABRICATION

A. General: Preassemble items in the shop to the greatest extent possible. Use connections that maintain structural value of joined pieces.

1. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges. Remove sharp or rough areas on exposed surfaces.

2. Bend steel plate for corners to create a seamless transition. Welding of corners and horizontal welding is not accepted. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. Remove welding flux immediately. Finish exposed welds smooth and blended.

3. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners where possible.

B. Miscellaneous framing and supports: Provide steel framing and supports not specified in other Sections as needed to complete the Work. Fabricate units from steel shapes, plates, and bars of welded construction. Cut, drill, and tap units to receive hardware, hangers, and similar items.

3.04 INSTALLATION

A. Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction.

B. Install items plumb and level, accurately fitted, free from distortion or defects.

C. Make provisions for erection stresses. Install temporary bracing to maintain alignment, until permanent bracing and attachments are installed.

D. Perform field welding in accordance with AWS D1.1.

E. Obtain approval of Engineer prior to site cutting or making adjustments.

3.05 ERECTION TOLERANCES

A. Maximum Variation From Plumb: 1/4 inch for every 12 ft in height.

B. Maximum Offset From Alignment: 1/8 inch.

C. Maximum Out-of-Position: 1/8 inch.

END OF SECTION