

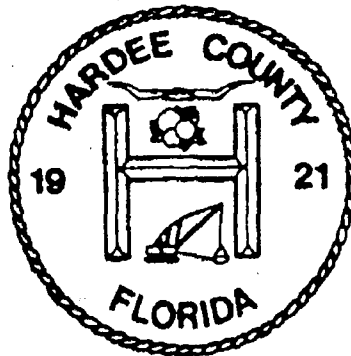
FILE

D.E.P.
JUN 27 1997
SOUTHWEST DISTRICT
TAMPA

HARDEE COUNTY REGIONAL LANDFILL

HARDEE COUNTY, FLORIDA

APPLICATION FOR CONSTRUCTION PERMIT



Part I

JUNE 1997

Prepared for:

HARDEE COUNTY BOARD OF COUNTY COMMISSIONERS

Room A-203, Courthouse Annex

412 West Orange Street

Wauchula, FL 33873-2867

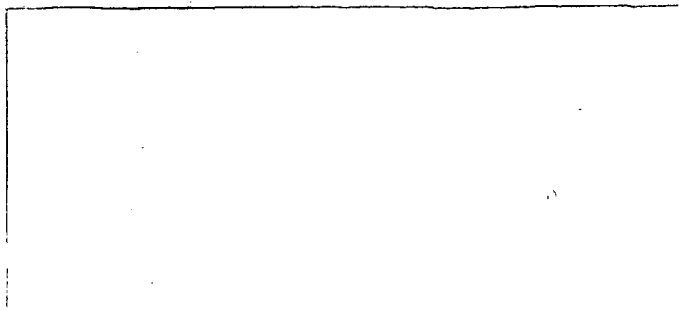
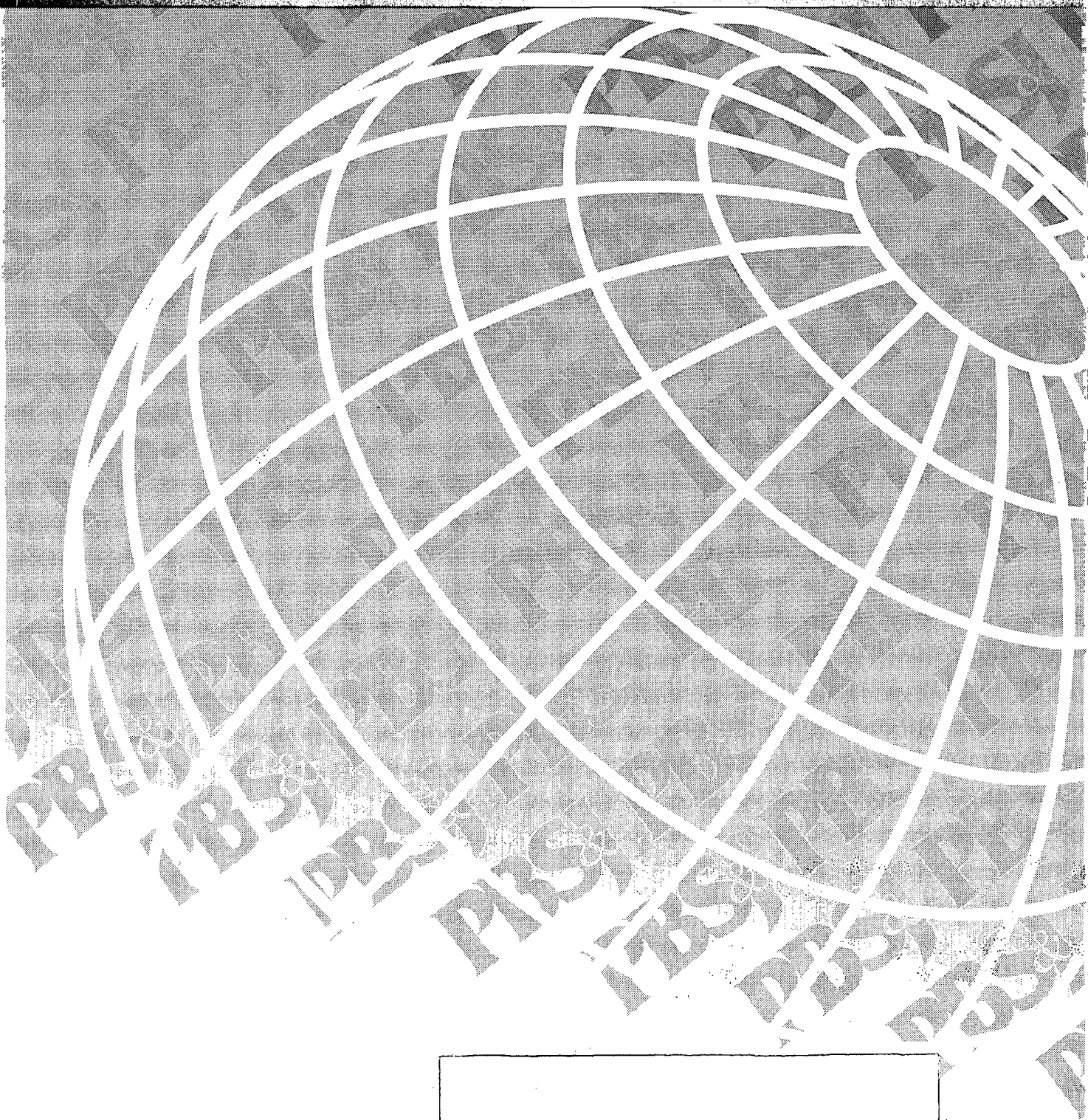
Prepared by:

POST, BUCKLEY, SCHUH & JERNIGAN, INC.

Winter Park Plaza

1560 Orange Avenue, Suite 700

Winter Park, Florida 32789



PBSJ POST,
BUCKLEY,
SCHUH &
JERNIGAN, INC.

FILE

D.E.P.

JUN 27 1997

COUNTY DISTRICT
TAMPA

**TECHNICAL SPECIFICATIONS
HARDEE COUNTY LANDFILL
LATERAL EXPANSION AND
LEACHATE STORAGE TANK FACILITY**

**HARDEE COUNTY, FLORIDA
JUNE 1997**

TECHNICAL SPECIFICATIONS

**HARDEE COUNTY LANDFILL
LATERAL EXPANSION AND
LEACHATE STORAGE TANK FACILITY**

HARDEE COUNTY, FLORIDA

JUNE 1997

Prepared for

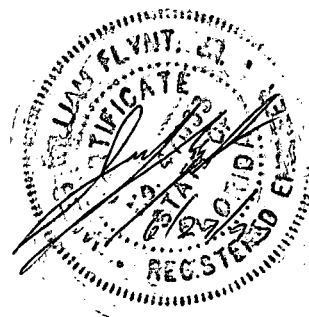
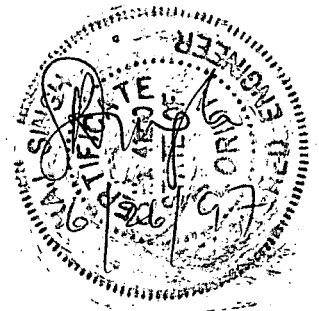
**BOARD OF COUNTY COMMISSIONERS
HARDEE COUNTY, FLORIDA**

Prepared by

**POST, BUCKLEY, SCHUH & JERNIGAN, INC.
1560 Orange Avenue, Suite 700
Winter Park, Florida 32789**

07-862.35

**D.E.P.
JUN 27 1997
SOUTHWEST DISTRICT
TAMPA**



The responsible professional engineers for the Hardee County Landfill Lateral Expansion and Leachate Storage Tank Facility Technical Specifications are as follows:

Responsible professional signing and sealing for

- Divisions 2 - Site Work

is Jim Flynt, P.E.

Responsible professional signing and sealing for

- Division 3- Concrete
- Division 5 - Metals
- Division 6 - Wood and Plastic
- Division 7 - Thermal and Moisture Protection
- Division 8 - Doors and Windows
- Division 9 - Finishes
- Division 11 - Equipment
- Division 13 - Special Construction
- Division 15 - Mechanical
- Division 16 - Electrical

is Raj Singh, P.E.

Their signature and seal appears on the cover sheet for this document.

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GENERAL REQUIREMENTS

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TAMPA

SECTION 01000

GENERAL REQUIREMENTS

D.E.P.

JAN - 2 1998

SOUTHWEST DISTRICT
TAMPA

PART I - GENERAL

1.01 SCOPE AND INTENT

- A. Description: The work to be done consists of the furnishing of all labor, materials and equipment, and the performance of all work included in this Contract. The summary of the work is presented in Section 01010.
- B. Requirements Included:
1. The Contractor shall furnish all labor, superintendence, materials, plant, power, light, heat, fuel, water, tools, appliances, equipment, supplies, and other means of construction necessary or proper for performing and completing the work. He shall obtain and pay for all required permits. He shall perform and complete the work in the manner best calculated 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. He 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 plant, 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 approval of the Engineer notwithstanding.
- C. Public Utility Installations and Structures:
1. Public utility installations and structures shall be understood to include all poles, tracks, pipes, wires, conduits, house service connections, vaults, manholes and all other appurtenances and facilities pertaining thereto whether owned or controlled by the Owner, other governmental bodies or privately owned by individuals, firms

or corporations, used to serve the public with transportation, traffic control, gas, electricity, telephone, sewerage, drainage, water or other public or private property which may be affected by the work shall be deemed included hereunder.

2. The Contract Documents contain data relative to existing public utility installations and structures above and below the ground surface. These data are not guaranteed as to their completeness or accuracy and it is the responsibility of the Contractor to make his own investigations to inform himself fully of the character, condition and extent of all such installations and structures as may be encountered and as may affect the construction operations.
3. The Contractor shall protect all public utility installations and structures from damage during the work. Access across any buried public utility installation or structure shall be made only in such locations and by means approved by the Engineer. The Contractor shall so arrange his operations as to avoid any damage to these facilities. All required protective devices and construction shall be provided by the Contractor at his expense. All existing public utilities damaged by the Contractor which are shown on the Drawings or have been located in the field by the utility shall be repaired by the Contractor, at his expense, as directed by the Engineer. No separate payment shall be made for such protection or repairs to public utility installations or structures.
4. 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.
5. 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 General Conditions.~~
6. The Contractor shall, at all times in performance of the work, employ approved 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.

7. All Owner and other governmental utility departments and other owners of public utilities which may be affected by the work will be informed in writing by the Owner within two weeks after the execution of the Contract or Contracts covering the work. Such notice will set out, in general, and direct attention to, the responsibilities of the Owner and other governmental utility departments and other owners of public utilities for such installations and structures as may be affected by the work and will be accompanied by one set of Drawings and Specifications covering the work under such Contract or Contracts.
8. In addition to the general notice given by Owner, the Contractor shall give written notice to Owner and other governmental utility departments and other owners of public utilities of the location of his proposed construction operations, at least forty-eight hours in advance of breaking ground in any area or on any unit of the work.
9. 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.

1.02 DRAWINGS AND PROJECT MANUAL

A. Drawings:

1. The Drawings referred to in the Contract Documents bear the general project name and number as shown in the Invitation to Bid.
2. Where variances occur between Drawings and Specifications, between large scale drawings over small scale, or within either document itself, include the item or arrangement of better quality, greater quantity, or higher cost in Bid Price. Engineer will have final decision regarding item and manner in which the work is to be installed.

B. Copies Furnished to Contractor:

1. After the Contract has been executed, the Contractor will be furnished one (1) complete set of reproducible mylar sepia (24 inches by 36 inches) 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 men 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 one (1) complete set of reproducible mylar sepias (24 inches by 36 inches) and one (1) copy of the Specifications.
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 his own expense. He 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 Engineer 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.

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. In the event of inconsistencies in the requirements of the Drawings and Specifications, the more expensive will be assumed to govern unless otherwise directed by the County.

1.03 MATERIALS

A. Manufacturer:

1. The names of proposed manufacturers, material men, suppliers and dealers who are to furnish materials, fixtures, or other fittings shall be submitted to the Engineer for approval, as early as possible, to afford proper investigation and checking. Such approval must be obtained before Shop Drawings will be checked. No manufacturer will be approved for any materials to be furnished under this Contract unless he shall be of good reputation and have a plant of ample capacity. He 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.
3. Any two or more pieces of material 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 in ample quantities to insure the most speedy and uninterrupted progress of the work so as to complete the work within the allotted time.
2. The Contractor shall also coordinate deliveries in order to avoid delay in, or impediment of, the progress of the work of any related Contractor.

1.04 INSPECTION AND TESTING

A. General:

1. Inspection and testing of materials will be provided by the party specified in Section 1410 .
2. 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. Five copies of the reports shall be submitted and authoritative certification thereof must be furnished to the Owner as a prerequisite for the acceptance of any material.
3. If, in the making of any test of any material, it is ascertained by the Owner that the material 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 to remove it promptly from the site or from the work and replace it with acceptable material, without cost to the Owner.

B. Costs:

1. All inspection and testing of materials furnished under this Contract will be provided by the party specified in Section 1410.
2. Materials submitted by the Contractor as the equivalent to those specifically named in the Contract may be tested by the Owner for compliance. The Contractor shall reimburse the Owner for the expenditures incurred in making such tests of materials which are rejected for non-compliance.

C. Inspection of Materials:

1. The Contractor shall give notice in writing to the Owner, 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 Owner will arrange to have a representative present at such times during the manufacture as may be necessary to inspect the materials or he 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. When inspection is waived or when the Owner so requires, the Contractor shall furnish to him 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 or on similar products of the manufacturer.

E. Failure of Tests:

1. 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 by replacements or otherwise. The decision of the Owner as to whether or not the Contractor has fulfilled his obligations under the Contract shall be final and conclusive.
2. 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 his own expense.
3. In case the Owner rejects any materials, then the Contractor shall replace the rejected materials within a reasonable time. If he fails to do so, the Owner may, after the expiration of a period of thirty (30) calendar days after giving him 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 the Contractor under his Contract.

F. Final Inspection: During such final inspections, the work shall be clean and free from water and construction debris. In no case will the final estimate be prepared until the

Contractor has complied with all requirements set forth and the Owner has made the final inspection with the Contractor of the entire work and is 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:

1. If, during the course of the work, it is necessary to remove or disturb any fence or part thereof, the Contractor shall provide a suitable temporary fence at his own expense.
2. 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 accepting 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 save harmless the Owner 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 TEMPORARY SERVICES

A. Accident Prevention:

1. 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.
2. 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 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.

B. 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 men are employed on the work.

1.07 LINES AND GRADES

A. Grade:

1. All work under this Contract shall be constructed in accordance with the lines and grades shown on the Drawings, or as given by the Engineer. The full responsibility for keeping alignment and grade shall rest upon the Contractor.
2. The Owner will establish bench marks and base line controlling points. Reference marks for lines and grades as the work progresses will be located to cause as little inconvenience to the prosecution of the work as possible.
3. The Contractor shall so place excavation and other materials as to cause no inconvenience in the use of the reference marks provided. He shall remove any obstructions placed by him contrary to this provision.

B. Surveys:

1. The Contractor shall furnish and maintain, at his own expense, stakes and other such materials for setting project control points.
2. The Contractor shall check the County's permanent reference points by such means as he may deem necessary and, before using them, shall call the Engineer's attention to any inaccuracies.
3. The Contractor shall, at his own expense, establish all working or construction lines and grades as required from the County's permanent reference marks set by the County, and shall be solely responsible for the accuracy thereof. He shall, however, be subject to the check and review of the Owner.

C. Safeguarding Marks:

1. The Contractor shall safeguard all points, stakes, grade marks, monuments and bench marks made or established on the work, bear the cost of reestablishing them if disturbed, and bear the entire expense of rectifying work improperly installed due to not maintaining or protecting or to removing without authorization such established points, stakes and marks.
2. The Contractor shall safeguard all existing and known property corners, monuments and marks adjacent to but not related to the work and, if required, shall bear the cost of reestablishing them if disturbed or destroyed.

1.08 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 therefor.
3. Contractor is expressly advised that the protection of buildings, structures, tunnels, 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 interior and exterior 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. This does not preclude conforming to the requirements of the insurance underwriters. Copies of surveys, photographs, reports, etc., shall be given to the Owner.
6. Prior to the beginning of any excavations, the Contractor shall advise the Owner of all buildings or structures on which he intends to perform work or which performance of the project work will affect.

B. Protection of Trees:

1. All trees and shrubs shall be adequately protected by the Contractor with boxes and otherwise and in accordance with ordinances governing the protection of trees. No excavated materials shall be placed so as to injure such trees or shrubs. Trees or shrubs destroyed by negligence of the Contractor or his employees shall be replaced by him with new stock of similar size and age, at its proper season and at the sole expense of the Contractor.

2. Beneath trees or other surface structures, where possible, pipelines may be built in short tunnels, backfilled with excavated materials, except as otherwise specified, or the trees or structures carefully supported and protected from damage.
 3. The Owner may order the Contractor, for the convenience of the Owner, to remove trees along the line or trench excavation. If so ordered the Owner will obtain any permits required for removal of trees.
- C. Lawn Areas: Lawn areas shall be left in as good of condition as before the starting of the work. Where sod is to be removed, it shall be carefully removed, and later replaced, or the area where sod has been removed shall be restored with new sod.
- D. Restoration of Fences:
1. Any fence, or part thereof, that is damaged or removed during the course of the work shall be replaced or repaired by the Contractor and shall be left in as good a condition as before the starting of the work.
 2. The manner in which the fence is repaired or replaced and the materials used in such work shall be subject to the approval of the Owner.
 3. The cost of all labor, materials, equipment, and work for the replacement or repair of any fence shall be deemed included in the appropriate Contract Item or items, or if no specific item is provided thereof, as part of the overhead cost of the work, and no additional payment will be made.

1.09 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 watchmen at all places where the work causes obstructions to the normal traffic or constitutes in any way a hazard to the public.

B. Smoke Prevention: The Contractor shall use hard coal, coke, oil or gas as fuel for equipment generating steam. A strict compliance with ordinances regulating the production and emission of smoke will be required.

C. Noise:

1. The Contractor shall eliminate noise to as great an extent as practicable at all times. Air compressing plants shall be equipped with silencers and the exhaust of all gasoline motors or other power equipment shall be provided with mufflers.
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 done between the hours of 5:00 p.m. and 7:00 a.m., on Sundays and legal holidays without written permission of the Owner. 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.

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

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

1.10 CUTTING AND PATCHING

- A. The Contractor shall do all cutting, fitting or patching of his portion 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.

1.11 CLEANING

A. During Construction:

1. During construction of the work, 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 and 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.

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 taken away, and he shall remove and promptly dispose of all water, dirt, rubbish or any other foreign substances.
2. The Contractor shall thoroughly clean all materials installed by him and shall deliver such materials undamaged in a bright, clean, polished and new operation condition.

1.12 MISCELLANEOUS

A. Protection Against Siltation and Bank Erosion:

1. The Contractor shall arrange his operations and construct erosion control devices to minimize siltation and bank erosion on construction sites and on existing or proposed water course and drainage ditches.
2. The Contractor, at his own expense, shall remove any siltation deposits and correct any erosion problems as directed by the Owner which results from his construction operations.

B. Protection of Wetland Areas:

1. The Contractor shall properly dispose of all surplus material, including soil, in accordance with local, State and federal regulations.
2. Under no circumstances shall surplus material be disposed of in wetland areas as defined by the Florida Department of Environmental Protection.

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

D. 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.

E. 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 site of the Work to be performed hereunder at such 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 his work that such other contractors may complete their work at the earliest date possible.

F. 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 done at the Hardee County Landfill, located east of Wauchula, off Airport Road, one-half mile north of SR 636, in Hardee County, Florida.

1.02 DESCRIPTION OF WORK

- A. The project consists of the construction of a geosynthetic liner along the southern boundary of the landfill to connect to the existing geosynthetic liner and the construction of a leachate collection system to connect to the existing leachate collection system that is located around the west, north, and east boundary of the landfill. The Project also includes the construction of a leachate storage and truck loading facility and associated pumping systems.

1.03 WORK BY OWNER

- A. Owner will continue the disposal of solid waste within the active, Class I area. The Contractor will work closely with the Owner to limit impacts on landfill operations.
- B. If it is necessary in the course of operating the landfill, for the Contractor to move its equipment, and/or materials, he shall do so promptly and place that equipment and/or materials in an area that does not interfere with the landfill operations.

1.04 WORK BY CONTRACTOR

- A. The Contractor shall furnish all labor, materials, equipment, tools, services and incidentals to complete all of the work required as shown on the Drawings and specified.
- B. The Contractor shall complete the work, in place, ready for continuous service, and shall include repairs, testing, permits, cleanup, replacements, and restoration required as a result of damages caused during construction.
- C. All material, equipment, skills, tools and labor which is reasonably and properly inferable and necessary for the proper completion of the work, in a substantial manner and in compliance with the requirements stated or implied by the Specifications or Drawings, shall be furnished and installed by the Contractor without additional compensation, whether specifically indicated in the Contract Documents or not.

- D. The Contractor shall comply with all municipal, county, state, federal laws, rules, guidelines, and codes which are applicable to the work.
- E. The Contractor shall pay for all retesting as a result of the original test samples failing to meet the specification requirements.
- F. It is the intent of the installation of the geosynthetic liner that an impermeable barrier be developed to prevent liquid from passing into or out of the landfill. Any leakage found through the liner must be corrected by the Contractor.

1.05 CONTRACTOR USE OF SITE

- A. Access to Site: Limited to public rights-of-way.
- B. Working Period: On site work by Contractor is limited to normal landfill hours of operation. If the Contractor desires to work when the landfill is closed, prior written permission of Owner must be obtained, and if Owner grants permission, Contractor must pay all Owner's associated costs. The County must have a certified landfill operator on site if the facility is open for any type of operation, including construction.
- C. Construction Operations: Limited to the Class I landfill area, existing leachate dewatering ditch and leachate sprayfield, Contractor's storage and office areas, borrow and stockpile areas, and miscellaneous site improvement areas noted on Drawings.
- D. Limit Use of Landfill Property:
 - 1. Allow use of active refuse disposal areas by public and Owner including utilization of paved entrance roads and of haul roads.
 - 2. Allow Owner activities for operation.
- E. Utility Outages and Shutdown: Prior approval by Owner and minimized in duration.
- F. Safety Precautions
 - 1. No smoking on landfill disposal cells.
 - 2. Explosive and hazardous gases may be present. Provide detection equipment and procedures for protection.
- G. Observe landfill regulations for disposal of materials.

1.06 SITE CONDITIONS

- A. Test borings made on the site for use in the design are available for the Contractors use.
- B. The Contractor shall be responsible for having determined to his satisfaction, prior to the submission of his Bid, the conformation of the ground, the character and quality of the substrate, the types and quantities of materials to be encountered, the nature of the ground water conditions, the execution of the work, the general and local conditions and all other matters which can, in any way, affect the work under this Contract. No claim for extras based on substrate or ground water table conditions will be allowed.

1.07 WORK SEQUENCE

- A. General: In addition to the southern liner and leachate collection systems construction, the Contractor must:
 - (1) Construct and make operational the modification to the leachate pump station and force main, complete with controls and instrumentation; and
 - (2) Construct and make operational the Leachate Storage Tank and Truck Loading Facility; and
 - (3) Make minor drainage improvements; and
 - (4) Construct roadway for Leachate Storage Tank and Truck Loading Facility.
- B. The Work is to be constructed to accommodate Owner's occupancy requirements during the construction period and landfilling operations. The Contractor shall coordinate construction schedule and operations with Owner.
- C. Recommended sequencing of work shall be as follows:
 - 1) Construct a berm around the leachate pump station to separate the pump station from the leachate in the leachate collection pond. Modify the leachate collection pump station and install force main to the leachate storage tanks.
 - 2) Excavate trench for the placement of the geomembrane and attachment to the old geomembrane.
 - 3) Backfill liner.
 - 3) Construct and test leachate storage tanks and truck loading facility.

END OF SECTION

01010-4

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

- A. General provisions of Contract, including General and Supplementary Conditions.
- B. Division 1 through Division 16 Specification Sections.

1.02 SECTION INCLUDES

- A. Administrative and procedural requirements governing the Contractor's Schedule of Values and Applications for Payment.

1.03 SCHEDULE OF VALUES

- A. Coordinate preparation of the Schedule of Values with preparation of the Progress Schedule.
- B. Submit the preliminary and finalized Schedule of Values ~~in accordance with the General Conditions.~~
- C. Sub-Schedules: Where the Work is separated into phases that require separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
- D. Format and Content: Use the form for the Schedule of Values and the Project Manual Table of Contents Divisions 1 through 16 as a guide to establish the format.
 - 1. Identification: Include the following Project Identification on the Schedule of Values:
 - a. Title of project and location
 - b. Owner and purchase order number
 - c. Engineer and project number
 - d. Name and address of Contractor
 - e. Contract designation
 - f. Date of submission

2. Arrange the Schedule of Values in a tabular form with separate columns to indicate the following for each item listed:
 - a. Generic name.
 - b. Related Specification Section.
 - c. Change Orders (numbers) that have affected value.
 - d. Dollar value.
 - e. Percentage of Contract.
 3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Separate principal subcontracts into several line items.
 4. Round amounts off to the nearest whole dollar; the total shall equal the Contract Sum.
 5. For each part of the Work where an Application for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed, provide separate line items on the Schedule of Values for initial cost of the materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
 6. Each item in the Schedule of Values and Applications for Payment shall be complete including its total cost and proportionate share of indirect cost, general overhead and profit margin.
- E. Schedule Updating: Update and resubmit the Schedule of Values when Change Orders or Work Change Directives result in a change in the Contract Price.

1.04 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Engineer and paid for by the Owner.
- B. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.
- C. Payment Application Times: each progress payment date is as indicated ~~in the General Conditions~~. The period of Construction Work covered by each Application of Payment is the period indicated ~~in the General Conditions~~.

- D. ~~Payment Application Forms: Use AIA Document G-702 and Continuation Sheet G-703 as the form for Application for Payment.~~
- E. Application Preparation: Complete every entry on the form, including notarization and execution by person authorized to sign legal documents on behalf of the Contractor. Incomplete applications will be returned without action.
1. Entries shall match data on the Schedule of Values and Progress Schedule. Provide updated schedules if revisions have been made.
 2. Include amounts of Change Orders and Work Change Directives issued prior to the last day of the construction period covered by the Application.
 3. Include "Indemnification" and "Compliance with Trench Safety Act" as items on Pay Schedule.
- F. Transmittal: Submit two (2) complete original executed copies of each Application for Payment to the Engineer, including Contractor's Warranty of Title, on the forms provided in the Contract Documents.
1. Transmit each copy with a transmittal form listing attachments, and recording appropriate information related to the application in a manner acceptable to the Engineer.
- G. Waivers of Mechanics Lien: With each Application for Payment submit waivers of mechanics liens on the forms provided in the Contract Documents from Contractor and from subcontractors or sub-subcontractors and suppliers for the construction period covered by the application. When an application shows completion of an item.
1. The Owner reserves the right to designate which entities involved in the Work must submit waivers.
 2. Submit Final Application for Payment with or preceded by final waivers on the forms provided in the Contract Documents from every entity involved with performance of Work, including material and/or equipment suppliers, covered by any Application for Payment who could lawfully be entitled to a lien.
 3. Waivers Form: Submit waivers of lien on the forms provided in the Contract Documents, and executed in a manner acceptable to Owner.
- H. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of the first Application for Payment include the following:

1. List of Subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Progress Schedule.
5. Schedule of principal products.
6. Schedule of unit prices.
7. Shop drawing submittal schedule.
8. Certificates of insurance and insurance policies.
9. Copies of permits.
10. Copies of authorizations and licenses from governing authorities for performance of the Work.
11. Initial progress report.
12. Minutes of pre-construction meeting.
13. Performance and Payment Bonds.

I. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment; this application shall reflect any Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work. Administrative actions and submittals that shall precede or coincide with this application include:

1. Occupancy permits and similar approvals.
2. Warranties (guarantees) and maintenance agreements.
3. Test/adjust/balance records.
4. Maintenance instructions.
5. Meter readings.
6. Start-up performance reports.
7. Change over information related to Owner's occupancy, use, operation, and maintenance.
8. Final Cleaning.
9. Change of door locks to Owner's access.
10. Final progress photographs.

J. Final Payment Application: Administrative actions and submittals which must precede or coincide with submittal of the Final Payment Application include the following:

1. Completion of Project closeout requirements.
2. Completion of items specified for completion after Substantial Completion.
3. Transmittal of required Project construction records to Owner.
4. Removal of temporary facilities and services.

5. Removal of surplus materials, rubbish and similar elements.
6. Certified property survey.
7. Proof that taxes, fees, and similar obligations have been paid.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

SECTION 01030

SPECIAL PROVISIONS

D.E.P.

APR 27 1998

SOUTHWEST DISTRICT
TAMPA

PART 1 - GENERAL

1.01 UTILITIES

- A. The Contractor is responsible for providing any water, power, and sanitary facilities required at the site.

1.02 PERMITTING

- A. The Contractor shall obtain all local permits as required.

1.03 SITE SPECIFIC HEALTH AND SAFETY PLAN

- A. Prior to commencement of any work, the Contractor is required to submit to the County a Site Specific Health and Safety Plan in accordance with the Regulations 29 CFR 1910.120(b)(4), as developed by the Occupational Safety and Health Administration (OSHA). The plan shall include, at a minimum the following:

1. An organizational chart detailing individual responsibilities,
2. A site-specific definition of work tasks and objectives,
3. Personal protective equipment,
4. Monitoring, and
5. Emergency response plan.

- B. The Contractor is required to develop any other additional plans the Contractor deems necessary to protect the health and safety of their personnel.

1.04 ENVIRONMENTAL PROTECTION

- A. The Contractor is specifically cautioned on the following items:

1. Excavations: All excavations shall be confined to the immediate areas of proposed excavation, as shown on the construction drawings.
2. Environmental Constraints:
 - a. Dust Control: Trucked water or ~~calcium chloride~~ shall be used if necessary to prevent dust.

- b. Odors: Excavated materials causing odors shall be trucked to an area designated by the Owner. Emphasis shall be given to the reduction of any other circumstances causing odors.
 - c. Explosion Protection: Precautions shall be exercised on overnight stoppages to prevent methane accumulation. The Contractor shall be responsible for enforcing all additional explosion protection precautions according to the National Landfill Gas Committee Health and Safety Guidelines.
 - d. Fire Control: The Contractor shall be responsible for fire control and submit a safety plan and fire control procedures (to which he will adhere during the entire Contract time) to the Engineer.
 - e. Litter: The Contractor shall be required to control, collect, and truck all litter excavated or exposed by the work.
3. Landfill Operation Procedures: Contractor operations shall not interfere with work performed by others.

1.05 SAFETY

- A. Trench Safety Act. The Contractor shall comply with all of the requirements of the Florida Trench Safety Act (Chapter 90-96, CS/CB 2626, laws of Florida). The Contractor shall acknowledge that included in various items of his bid proposal and in the total bid price are costs for complying with the provisions of the Act. Additionally, the Contractor is required to break out the costs for complying with the Florida Trench Safety Act. **FAILURE TO COMPLY WITH THE REQUEST IN THIS SECTION SHALL RESULT IN THE BID BEING DECLARED NON-RESPONSIVE.**
- B. Work In and Around Landfills: All work shall be done in accordance with State and local requirements and OSHA Safety and Health Standards as defined in 29 CFR and shall conform to the Landfill Gas Division of the Solid Waste Association of North American (SWANA) A compilation of landfill gas field practices and procedures dated March, 1992.

1. General

The Occupational Safety and Health Act (OSHA) of 1970 imposes a duty on employers to furnish a safe and healthful job environment for all employees. The employees are required to comply with safety rules and regulations applicable to their activities and conduct. Employers have the obligation not only to eliminate recognized hazards and to comply with national safety and health standards, but also to provide information and training to create the necessary awareness on the part of the employees.

Landfill safety requires more than the common sense safety procedures common to all industry. Bacterial decomposition of trash results in the formation of methane, a colorless, odorless, explosive gas that together with other volatile materials evolves into the atmosphere and migrates through the soil into surrounding areas. Air quality studies consistently show that concentrations of potentially hazardous substances (OSHA "Priority Pollutants) in the ambient air in the vicinity of solid waste landfills are well below threshold limits. However, in confined or enclosed areas on or adjacent to landfills, dangerous concentrations of combustible and possibly toxic gases may accumulate. Oxygen depletion may also occur in these areas of confinement; therefore, safety procedures should be followed at all times.

2. Safety Equipment

Workers engaged in construction or maintenance of landfill gas facilities should wear protective safety equipment as follows:

- a. Hard hats, if near moving mechanical equipment.
- b. Steel-toed, shoes or rubber boots.
- c. Safety glasses or face shields, as appropriate.
- d. Protective gloves (rubber or plastic would work if working with wet solid waste or where exposure to leachate/condensate is expected).
- e. Hearing protection, depending on noise level of work environment.

The following safety equipment should be available at the job site in quantities sufficient to cover the construction crew:

- a. Clean water, sump and paper towels.
- b. First aid kit, eye wash station, stretcher, and blanket.
- c. Fire extinguisher (2) - 20:A-80:BC.
- d. No smoking signs.
- e. Acid vapor masks for all personnel.
- f. Parachute-type harnesses (2) and safety lines (for use in excavations, manholes, etc.).

- g. Self-contained breathing apparatus.
- h. Methane/oxygen indicator.
- i. Hydrogen sulfide indicator (Draeger Tubes).
- j. Additional monitoring equipment for toxic vapors and aerosols.
- k. Barricades
- l. Covers for excavations that will remain open at end of working day.
- m. Air-moving equipment that can provide ventilation if working in sub-standard air environment (trenches, ~~condensate drain pits~~, etc.).
- n. Fire blanket.
- o. Organic vapor masks.
- p. Construction equipment equipped with vertical exhaust or spark arrestors if within 2 feet of grade.
- q. Flagging, traffic markers, and florescent orange safety vests for use when working around operating equipment or near public roadways.

3. Personal Health and Hygiene

- a. Personal safety and the safety of fellow workers require that all employees are mentally alert and in good general health. No alcohol or drugs are permitted. Smoking should be prohibited on the landfill site. No worker should handle excavated solid waste without wearing gloves. Parts of the body accidentally exposed to waste, leachate or condensate should be washed with soap and water.
- b. An annual medical examination also is recommended for workers whose activities include daily exposure to solid waste or landfill gases. Any cut or abrasion should be treated immediately as the chance of infection is high when working on a landfill. A tetanus shot is recommended at specified intervals for all personnel involved in site construction.
- c. Avoid contact with unfamiliar plants or those known to be hazardous growing on the landfill.

- d. Animals, snakes, spiders, and other insects should be avoided. Be particularly careful around vaults and valve boxes. First aid supplies should include a snake bite kit.
- e. The address, phone number, and location map of the local hospital and medical emergency room should be prominently posted. In addition, the phone number of an ambulance and fire department/rescue unit should be posted.
- f. Wash hands prior to eating.

4. Landfill Safety Procedures

- a. As a general rule landfill gas (LFG) work should be performed by a team composed of a minimum of two people. In situations where hazards are minimal, and where it's necessary to allow an individual to work alone, another responsible individual must be aware of the lone workers task and scheduled time of completion/return, and if possible monitor the individuals progress.
- b. When working on (or within 1,000 feet of) an active or completed solid waste landfilled area, be alert to the existence of (or potential for) hazardous conditions, i.e., the presence of landfill gas. The distance of 1,000 feet is used by some authorities as the maximum distance landfill gas will migrate through soils under average conditions. Migration distance, however, may be greater through underground conduits, or where surface conditions interfere with normal venting.

Hazards that might occur could be one or more of the following:

- 1. Fires may start spontaneously from exposed and/or decomposing solid waste.
- 2. Fires and explosions may occur in confined or enclosed spaces from the presence of methane gas.
- 3. Landfill gases may cause an oxygen deficiency in underground trenches, vaults, conduits, and structures.
- 4. Hydrogen sulfide (H_2S) may be present. H_2S is a colorless, very flammable gas which, in low concentrations, has an offensive odor described as that of rotten eggs. However, H_2S quickly numbs the olfactory senses so that reliance upon the sense of smell can lead to a very dangerous condition and even cause virtually instant death.
- 5. Sudden subsidence or collapse of the landfill surface.

- c. A confined space is defined as a space where existing ventilation is insufficient to remove dangerous air contamination and/or oxygen deficiency, and where ready access/egress to escape, provide aid to remove a disabled employee is difficult. In the case of flammable gases, such as methane, a hazardous concentration is defined as any concentration greater than 20 percent of the lower atmosphere containing less than 19.5 percent oxygen by volume (Cal-OSHA). In the absence of positive ventilation, a mixture of 5 percent landfill gas in air will exceed both of these limits.
- d. Vaults and ditches greater than 3 feet and other non-ventilated confined spaces should not be entered unless tested for explosive concentrations, oxygen deficiency and H₂S levels. Air blowers or fans should be available for positive ventilation. Self-contained breathing apparatus or supplied-air masks must be used when entering areas containing hazardous and/or oxygen deficient atmospheres. "Chemical" cartridge respirators can be used for gaseous contaminants (not H₂S) if oxygen concentration is satisfactory. Mechanical filter respirators should be used only for protection against particulate matter.
- e. Fires or explosions in confined spaces require a source of ignition. Smoking is strictly forbidden except in well ventilated areas. Non-sparking and/or explosion proof tools should be used in vaults, trenches, or other enclosed areas. Positive ventilation is required in construction shacks or other structures on or near a landfill. Temporary structures on the landfill surface should be constructed on blocks or other supports with a ventilated area under the main floor. Construction equipment should be equipped with vertical exhaust and spark arrestors.
- f. Hydrogen sulfide gas is always present in some concentrations, generally below 100 parts per million (ppm), in landfill gas. It is unlikely that hazardous concentrations of H₂S will build up (see Table 1) except in vaults or other confined spaces where oxygen deficiency may be a major hazard. However in special circumstances, where there is a natural or manmade presence of gypsum along with high moisture, for example, very high lethal concentration levels of H₂S gas could be encountered under certain circumstances. Personnel must be trained for, and alert to, these possibilities. Gas masks are not effective against H₂S and fresh air breathing equipment is required.
- g. Employees who wear beards should not work in areas where air masks or respirators may be necessary. Other employees should not use stand-by people wearing beards. All employees should be fit-tested on the respirator that they will wear in order to assure a proper face piece seal against the face. Fit testing should reoccur at least annually.

~~5. Safety Procedures for Well Construction~~

01030 - 6

- ~~a. One person, with the sole responsibility of assuring the observance of all safety procedures, should be present at all times during the construction. This person should be trained in the use of all recommended safety equipment.~~
- ~~b. No smoking should be permitted within 50 feet of the drilling area. No smoking on the landfill is preferred.~~
- ~~c. Fire extinguishers should be on hand during drilling (two 20-A-80-BC extinguishers are recommended). The drilling crew should be alert for the potential for the drill auger to spark against rock or metal causing a serious fire in the boring. LFG will typically burn almost invisibly under such circumstances. Fires should be extinguished by covering the boring with earth materials by using earth moving equipment. As a contingency before drilling, arrangements should be made to have a loader or equivalent equipment available or on call in case of a boring fire.~~
- ~~d. Any personnel working near the edge of a well (greater than 12 inches in diameter) under construction shall wear a parachute-type harness and safety line tied to an immobilized drill rig or some other safe immobilized structure, and/or shall work with a drilling platform in place. Due to the typically oxygen deficient environment "down hole," an individual who fell "down hole," even a short distance, would likely not survive unless recovered. For this reason, it is preferable that all individuals working in the vicinity of drilling activities be tethered.~~
- ~~e. No worker should be allowed to work alone at any time near the edge of the well under construction. Another worker should be present, beyond the area considered to be subject to the possible effects of landfill gas or cave-in.~~
- ~~f. During drilling special consideration must be given to the less stable conditions represented by refuse, vis-a-vis compacted soil. Refuse must be considered more prone to instability that may cause side wall failure of the boring at any time. If this were to occur, the magnitude of the failure could be substantial. Individuals present at the time of failure could be buried in an oxygen deficient environment.~~
- ~~It is imperative that the personnel performing drilling work remain alert at all times to changing subsurface conditions and signs of impending physical failure such as fissures, etc. It is not uncommon to experience a "hollowing out" effect creating a cavity at depth much larger than the boring due to side wall failure "down hole". This could cause a sudden collapse to occur at the surface. It should be remembered that the drill rig usually exerts a large and vibratory force at the surface in the vicinity of the boring.~~
- ~~g. Drilling personnel must be alert to the potential for encountering subsurface hazards, particularly in older landfills where screening of disposal materials may~~

~~have been less controlled. Although rare, a variety of hazardous situations have been encountered while drilling in landfills especially near military or chemical processing facilities. These potential hazards include:~~

- ~~• Unknown hazardous chemicals in drums or containers. These could include combustible or explosive, reactive, toxic or corrosive materials.~~
- ~~• Military munitions.~~
- ~~• Asbestos~~
- ~~• Compressed gas cylinders (CGCs)~~
- ~~• Biomedical waste~~
- ~~• Radioactive waste~~
- ~~h. Periodically during the well construction, the work area should be monitored for levels of methane and hydrogen sulfide.~~
- ~~i. If the well construction is not completed by the end of the working day, the hole should be covered with a plate of sufficient overlap to prevent access to the hole and to support expected loads and weighted down to discourage removal. The edges of the plate should be covered with sufficient depth of wetted soil to prevent escape of gas. Barriades should be placed around the covered hole outside range of possible cave-ins.~~
- ~~j. All pipes shall be capped at the end of each working day.~~
- ~~k. An exhaust hood can be used to control venting LFG vapors while drilling to reduce personnel and environmental exposure. This is mandatory in some locales.~~

~~5~~ 6. Safety Procedures for Trenching and Pipe Installation

- ~~a. Excavation permits and shoring may be required for excavations deeper than 4 to 5 feet (into which workers will enter). Check state regulations, as standards and requirements vary.~~
- ~~b. One person, with the sole responsibility of assuring the observance of all safety procedures, should be present at all times during construction. This person should be trained in the use of all the recommended safety equipment.~~
- ~~c. No smoking on the landfill is preferred and should be prohibited.~~

- d. Prior to the entry of workers into an excavation deeper than 3 feet, and periodically during their work, the atmosphere in the excavation should be tested. If there are any doubts regarding safety, no worker shall be allowed to enter the excavation without at least a half-face or full-face OV/AG mask. If there is an oxygen deficiency, a concentration of any constituent with poor warning properties at a level greater than its TLV, or a concentration of hydrogen sulfide greater than 10 ppm, a pressure-demand SCBA or supplied air respirator with 5 minute emergency escape bottle should be used. If a combustible mixture of methane is present, further precautionary measures shall be taken; entry should be forbidden until the methane concentration is acceptable and at least below 1.0 percent by volume in air, or 20 percent of the LEL. If workers are not equipped with supplied air or pressure-demand SCBAs, then entry should be forbidden until the methane concentration is below 0.1 percent by volume in air, unless the Maximum Use Limitation (Mul) of the APR is greater. Workers required to work on an emergency basis, in any environment at or above the IDLH (the level immediately dangerous to life and health as declared and published by NIOSH) for any constituent component in the working environment, should be outfitted in pressure-demand SCBAs.
- e. No worker should be allowed to work alone at any time in or near the excavation. Another worker should be present, beyond the area considered to be subject to the possible effects of landfill gas.
- f. Periodically during construction the work area should be monitored for levels of methane and hydrogen sulfide.
- g. No worker should handle excavated solid waste without wearing appropriate work gloves.
- h. Construction equipment should be equipped with a vertical exhaust at least 5 feet above grade and with spark arrestors.
- i. Electrical motors, if used in the excavation area, shall be explosion-proof or non-sparking, totally enclosed fan cooled (TEFC); and electrical controls should be explosion-proof or intrinsically safe and meet the requirements for Class I, Division 2, Group D, (Methane), rated equipment in accordance with the National Electric Code (NEC).
- j. No welding should be permitted in, on, or immediately near the excavation area, unless previously and continuously monitored for methane and other combustible gases.

- k. Soil should be stockpiled near the excavation, to be used to smother any solid waste combustion should it occur.
- l. Solvent cleaning, gluing, or bonding of pipe should be performed to the extent possible, outside the trench. An organic vapor respirator shall be worn by persons using PVC solvents or glues. Personnel using solvent and cement shall be familiar with the appropriate materials safety data sheets for those products.
- m. Forced ventilation may be required for workers who must work in trenches deeper than 3 feet. Air blowers and fans may be used for positive ventilation. Dilution ventilation may address either an explosive gas hazard or a hazardous chemical health hazard. The amount of air required for ventilation must be determined based on the concentrations of explosive LFG or hazardous chemical constituents, the LEL for methane or the TLVs for the hazardous chemical constituents in question, the volume to be protected, ambient conditions, and an appropriate safety factor. These calculations should be performed by a qualified individual.
- n. During piping assembly, all valves should be closed immediately after installation.
- o. As construction progresses, all valves should be closed as installed to prevent the migration of gases through the pipeline and gas collection system.
- p. All piping shall be capped at the end of each working day.

~~7. General Construction/Maintenance~~

- ~~a. When drilling on LFG collection system piping containing LFG, only explosion-proof electric or hand-powered drills should be used.~~
- ~~b. When using alternating current powered power tools, a portable ground-fault current interrupter (GFCI) should be used.~~
- ~~c. When welding near gas recovery process equipment, suitable procedures and precautions should be employed including:~~
 - ~~• Processing a "hot work" permit. (A self-issued serial numbered permit is required in many states.)~~
 - ~~• Designate a specific, dedicated individual, by name, as a fire watch.~~
 - ~~• Verify that explosive concentrations are not present using an explosimeter.~~
 - ~~• Have adequate fire extinguishers (20-A-80-BC) and fire blankets on hand.~~

~~• Sandbag all drains.~~

~~• Provide the appropriate purge and inert blanket on process equipment and piping.~~

~~Procedures for safe welding and purging of process equipment are available from the American Petroleum Institute (API).~~

6.8. Field Sampling for Health and Safety

- a. The following instruments will remain at the job and be continuously employed by a qualified person:
 - H₂S chemical reagent diffusion tube indicator or direct reading instrument.
 - Oxygen Analyzer
 - CGA (methane analyzer).
- b. CGAs and other electronic portable monitoring instruments should be rated explosion-proof or intrinsically safe. It is also recommended that they be Factory Mutual rated.
- c. It is important that any site always be initially characterized so that correct information can be available to make appropriate decisions about personnel exposure safety.
- d. To accomplish Item C, a gas sample should be collected prior to the beginning of work or as soon as possible, and should be analyzed for volatile organic chemicals. If historical information or preliminary field screening indicate a need, the sample should also be analyzed for heavy metals capable of volatilizing, acid gases, and other inorganic compounds. Proper instructions and close coordination with the laboratory are important to properly characterize the gas. Several composite samples will provide a more uniform representation of LFG at the site. Several non-composited samples, may however, provide a better indication of peak concentrations and show chemicals which would not be indicated in the composite samples.
- e. ~~Monitoring for vinyl chloride, benzene, or other constituent chemicals may also need to be conducted during drilling operations. A written record of monitoring should be maintained daily.~~

7.9. Respiratory Protection

- a. All employees who may be required to wear respirators shall be trained in the proper use of respirators. Such individuals will have an appropriate physical examination for use of respirators. Each individual will be approved by a qualified physician for such respirator use. All personnel who wear respirators shall come under the jurisdiction of their employer's written respiratory protection program, and will follow and be knowledgeable about the program. Personnel will be individually fit-tested wearing their assigned respirator.
- b. Persons with interfering facial hair shall not be permitted in areas where respiratory protection equipment is required; i.e., beards are prohibited.
- c. Permanent damage to the eyes (cornea) from acid gases and particulates may result if contact lenses are worn. Therefore, wearing contact lenses on site shall be prohibited. Those persons shall have prescription spectacle inserts installed in their respiratory protective equipment.
- d. All NIOSH procedures and guidelines for respirator selection and use should be adhered to. Only equipment certified by NIOSH in its most recent certified equipment list will be used. APRs with chemical cartridges can only be used for acid gas/organic solvent vapors under the following conditions:
 - If the oxygen concentration is satisfactory.
 - If the chemical contaminants have been identified.
 - The concentrations are monitored.
 - The chemical filter cartridges are effective in removing the contaminants.
 - The cartridges are approved for such use (by NIOSH).
 - The contaminants have good warning properties.

If all of the above conditions cannot be satisfied, then Level B protection using pressure-demand SCBAs or supplied air is required. APRs with chemical cartridges/canisters will not be used for protection in environments containing constituents which have poor warning properties, and which are at or above, or can reasonably be expected to be near, at, and/or above the limitation of the protection factor (PF) for the respirator. The maximum working environment shall be determined by multiplying the PF for the type of respirator by the TLV for the chemical substance under consideration, ($MUC = PF \times TLV$). A list of PFs is shown in Table 2.

- e. Pressure demand SCBA or pressure demand supplied-air full-face masks shall be used when entering areas containing oxygen-deficient atmospheres, unknown atmospheres, or atmospheres considered to be at or above IDLH levels. Personnel (with appropriate SCBA apparatus) will not enter IDLH environments without emergency justification by and approval of a site safety manager or responsible project manager. An emergency is constituted by an already existing life threatening situation.
- f. The length of time an APR canister or cartridge is effective in removing hazardous material from the ambient air will depend on the type and concentration of hazardous material in the air and the level of effort required for a worker to accomplish his assigned tasks. The higher the breathing rate, the more frequently canisters will need to be replaced. These maximum operating periods vary according to manufacturer, so it will be necessary to monitor the total usage of cartridges and canisters during all work requiring a respirator.

Table 2

**TABLE OF RESPIRATORY PROTECTION EQUIPMENT
PROTECTION FACTORS**

Type of Air Purifying Respirator	Protection Factor
Half-face APR	10
Full-face APR	100
When employed for protection from benzene. See Note 1.	50
When employed for protection from vinyl chloride using vinyl chloride rated specific canister with a 4 hour service life. See Notes 2 and 3.	25
Pressure-Demand SCBA or supplied air-line respirators	10,000

~~Note 1: See the Benzene Standard, 29 CFR 1910.1028.~~

~~Note 2: See the Vinyl Chlorine Standard, 29 CFR 1910.1017.~~

~~Note 3: Because respirator cartridges/canisters meeting the service life requirements listed in 29 CFR 1910.1017 (g) are not normally available, work involving vinyl chloride concentrations above the action level of 0.5 ppm will require use of pressure-demand SCBAs.~~

10. Special Conditions

Certain types of work may present unusual problems at certain sites with special conditions. Examples include the following:

- a. ~~For protection against infectious waste, a Tyvek suit, appropriate gloves and boots, and a NIOSH-approved respirator with a high-efficiency particulate filter (HEPA) incorporated in the mask canister or cartridge, are suggested. Personnel should avoid or minimize contact with any waste, and be cautioned about possible contact with sharp objects such as needles. The HEPA filter may be combined with an OV/AG cartridge or canister.~~
- b. ~~For protection against gas vapors while drilling or while working around an open well casing, a NIOSH-approved full-face air-purifying respirator with an OV/AG canister including a HEPA filter may be necessary. The Saranex or Tyvek suit are also required. Also, appropriate gloves and boots. Appropriate measures may be taken to prevent heat stress.~~
- a-c. For protection from asbestos fibers, the minimum required includes a respirator with a HEPA filter and a Tyvek suit. The Tyvek suit may either be coated or uncoated. Special regulations exist for asbestos, for complete requirements see the Asbestos Standard, 29 CFR 1910.1001.
- b-d. A determination may need to be made regarding whether additional protection will be required, if significant levels of vinyl chloride or benzene (or other more toxic chemicals) are found during characterization. The action levels for vinyl chloride and benzene are one-half of 1 ppm. The maximum threshold limit value of benzene or vinyl chloride to which workers may be exposed over an 8-hour period is 1 ppm. The maximum concentration of vinyl chloride to which workers may be exposed in any given period is 5 ppm. If higher levels of vinyl chloride are found, respiratory protection levels may need to be adjusted to Level B (SCBA or supplied air) if engineering controls cannot reduce these levels. Because vinyl chloride and benzene are both regulated carcinogens, it is imperative and required that exposure be limited where at all possible; if not, then exposure must be reduced to the minimum possible extent through appropriate respiratory protection (i.e., vinyl chloride and benzene exposure should be held to zero whenever possible). For the Vinyl Chloride Standard, see 29 CFR 1910.1017. For the Benzene Standard, see 29 CFR 1910.1028.
- c-e. Special compliance requirements apply for personnel who must work with potential exposure to certain chemicals including vinyl chloride, benzene, and asbestos above action levels. Compliance requirements may vary with each compound and by state, but will likely include:

- Mandatory training
- Medical record keeping
- Exposure monitoring, and record keeping
- Certifications
- Specific protective equipment requirements

11. Shoring and Bracing

- a. No person shall enter any trench five feet or more in depth unless that trench has been shored, braced, sloped, or other provisions made to prevent cave-in. Shoring shall be engineered by a qualified and licensed civil or structural engineer or engineering geologist. Drawings, specifications, and calculations shall be signed by the engineer.
- b. Special consideration must be given to the less stable conditions represented by refuse vis-a-vis compacted soil. Refuse must be considered more prone to instability that may cause slope or side wall failure. This is due to the high void ratio, irregularity of material composing the refuse, and a typically lesser degree of compaction than soil.

12. Safety Management

- a. No safety program can be effective without management support and interest. It is recommended that all companies involved in the landfill gas industry initiate a safety program for the protection of the health and safety of the personnel involved.
- b. Safety procedures shall be reviewed with all workers to insure that they are aware of requirements and safety concerns.
- c. The Safety Officer shall be adequately qualified to insure that he is aware of requirements and safety concerns.
- d. Weekly meetings shall be held to review unsafe acts.
- e. Unsafe acts shall be stopped if discovered by the Safety Officer.
- f. Required safety equipment shall be on-site and shall be checked to verify completeness and function.

- g. Contracts for landfill gas testing, construction or operation should include a safety procedure clause.
- h. All employees on the job site should sign a document of their awareness of their work environment.
- ~~i. Appropriate local authorities (fire department, air quality, etc.) should be notified prior to drilling or flaring.~~
- ~~ij.~~ A safety checklist should be maintained at the job site.

Table 1

**PHYSIOLOGICAL RESPONSE TO VARIOUS
CONCENTRATIONS OF HYDROGEN SULFIDE**

<u>Physiological Response</u>	<u>Concentration/PPM</u>
Maximum allowable concentration for prolonged exposure.	10
Slight symptoms after several hours.	70-150
Maximum concentrations for one hour without serious consequences.	170-300
Dangerous after exposure of one-half to one hour.	400-700

NOTES:

1. Most landfills do not have H₂S in concentrations greater than 10 PPM. However, concentrations up to 250 PPM have been measured.
2. In many cases, laboratories do not know how to properly analyze for H₂S. Draeger tube check analyses are generally more accurate than most laboratories.

END OF SECTION

SECTION 01040

COORDINATION

PART 1 - GENERAL

1.01 PRECONSTRUCTION MEETING

- A. Prior to commencement of work, a preconstruction meeting will be held in compliance with the applicable provisions of Section 01200, for the purpose of clarifying the administrative procedures for prosecution of the work and explaining any requirements of the Contract Documents which are not understood.

1.02 COORDINATION OF DRAWINGS AND SPECIFICATIONS

- A. Before execution of Work, review all Drawings and Specifications and immediately report to the Engineer, in writing, all errors, discrepancies, and/or omissions discovered and submit one set of Contract Documents marked in red pencil clearly indicating the discrepancies.
- B. Where variances occur between Drawings and Specifications, between large scale drawings over small scale, or within either document itself, include the item or arrangement of better quality, greater quantity, or higher cost in Bid Price. Engineer will have final decision regarding item and manner in which the work is to be installed.
- C. Where such variances are encountered, notify Engineer for interpretation or decision before proceeding with the work, and such interpretation or decision will be final.
- D. Compare Drawings and verify the figures before laying out work. The Contractor will be held responsible for conflicts which might have been avoided by such verification.
- E. Drawings are diagrammatic and indicate general arrangement of systems and work included in the Contract.
 - 1. Follow Drawings in laying out the work and check Drawings of various trades to verify spaces in which work is to be installed.
 - 2. Notify Engineer where space conditions appear inadequate before proceeding.
 - 3. If directed by Engineer, make reasonable modifications in layout as needed to prevent conflict with work of various trades or for proper execution of work, without extra charge.

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1.03 COORDINATION OF THE WORK

- A. Coordinate construction activities of the various trades and disciplines to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed later.
- B. Verify that characteristics and elements of interrelated operating equipment are compatible. Coordinate work of various trades having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- C. Mechanical/Electrical:
 - 1. Coordinate space requirements and installation of mechanical and electrical work indicated diagrammatically on Drawings.
 - 2. Follow routing shown for pipes, ducts, and conduits, as closely as practicable.
- D. Seal penetrations through floors and walls, ~~and ceilings.~~

1.04 COORDINATION RESPONSIBILITIES

A. Subcontractor Coordination:

- 1. Insure subcontractors are knowledgeable of all provisions of Division 1, General Requirements, and are responsible for conforming to applicable requirements and instructions stated.
- 2. Assume responsibility for administering Work performed by subcontractors in accordance with Division 1, General Requirements.

B. Installation Sequencing:

- 1. Examine materials and installations performed by other trades before starting next stage or adjacent work.
- 2. Immediately correct unsatisfactory conditions which hinder or restrict correct installation of next stage or adjacent work.
- 3. Start of next stage or adjacent work will be construed as acceptance of previous or adjacent work whether or not conditions are satisfactory.

4. Any work requiring subsequent removal or replacement due to unsatisfactory or defective work shall be at no expense to the Owner.

1.05 PROJECT SIGNS

- A. Subject to prior approval of Engineer and Owner as to size, design, type and location, and local regulations, temporary signs may be erected by the Contractor and Subcontractor for purposes of identification and for controlling traffic.
- B. Furnish, erect, and maintain such signs as may be required by Safety Regulations or as necessary to safeguard life and property.

1.06 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 pipeline excavations. 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. Approximate locations of known water, sanitary, drainage, power and telephone installations along route of new pipelines or in vicinity of new work are shown, but must be verified in the field. The Contractor shall uncover these pipes, ducts, cables, etc., carefully, by hand, prior to installing new piping. Any discrepancies or differences found shall be brought to the attention of the Owner in order that necessary changes may be made to permit installation of new pipe. These conditions are supplemental to general requirements elsewhere in these specifications.

1.07 DAMAGE TO EXISTING STRUCTURES AND UTILITIES

- A. The Contractor shall be responsible for and make good all damage to pavement 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 existing utilities has been prepared from the most reliable data available to the Engineer. This information is not guaranteed, however, and it shall be this 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 the Contractor's activities.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

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SECTION 01050

FIELD ENGINEERING AND SURVEYING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

1. Field engineering and surveying services provided by the Contractor.
2. Survey work required in execution of Project.
3. Surveys for record drawings.
4. Identify property benchmarks.
5. Civil, structural or other professional engineering services specified or required to execute Contractor's construction methods.
6. The method of field staking for the construction of the work shall be at the option of the Contractor. The Owner shall provide the engineering surveys to establish reference points which in his judgment are necessary to enable the Contractor to proceed with his work.
7. The accuracy of any method of staking shall be the responsibility of the Contractor. All engineering for vertical and horizontal control shall be the responsibility of the Contractor.
8. The Contractor shall be held responsible for the preservation of all benchmarks, stakes, and marks. If any benchmarks, stakes, or marks are carelessly or willfully disturbed by the Contractor, the Contractor shall not proceed with any work until he has established such points, marks, lines and elevations as may be necessary for the prosecution of the work.
9. The Contractor shall retain the services of a registered land surveyor licensed in the State of Florida to identify existing control points and maintain a survey during construction.

1.02 QUALIFICATIONS OF SURVEYOR OR ENGINEER

- A. Qualified engineer or registered land surveyor, acceptable to the Owner and the Engineer.

- B. Registered professional engineer of the discipline required for the specific service on the Project, currently licensed in the State of Florida.

1.03 SURVEY REFERENCE POINTS

- A. Owner shall locate control points prior to starting site work, and Contractor shall protect and preserve all permanent reference points during construction.
 - 1. Contractor shall make no changes or relocations without prior written notice to the Engineer.
 - 2. Contractor shall report to the Engineer when any reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
 - 3. Contractor shall require surveyor to replace Project control points which may be lost or destroyed at no additional cost to the Owner. Establish replacement based on original survey control.

1.04 RECORDS

- A. Maintain a complete, accurate log of all control and survey work as it progresses.
- B. Submit record documents under provisions of Section 01720.
 - 1. At end of the project, submit a certified site survey and record drawing information or reproductive 24" x 36" tracing sheets for work performed.
 - 2. All survey information should be tied into site coordinate system.
 - 3. Liner and piping shown at 1"=50' scale.
 - 4. Manholes, cleanout locations and numbers should be submitted to the Engineer by coordinate location and shown on plan sheets.
 - 5. Catch basins, stormwater piping and structures, and manholes required invert elevations.

6. As-Built (Record) drawing grade elevations will be required at certain phases (or levels) of construction. The Contractor's registered Florida Land Surveyor will provide and maintain as-built notes and a finished as-built drawing at the completion of each liner component phase as listed below. Each liner component phase must be accepted by the Engineer in writing before the start of the next liner component phase. As-built drawings shall show actual grades, lengths, elevations and quantities of constructed items if different from those shown on the construction plans. As-built grade information shall be provided for the following liner component phases at intervals of no greater than 100 feet depicting high points and low points of liner construction:
 - a) Depth of confining clay layer
 - b) Liner subgrade
 - c) Location of geomembrane
 - d) As-Built topographic survey of site, to include all construction areas
7. Results of topographic surveys shall be plotted in plan to a scale similar to the Drawings and shall be submitted to the Engineer. A single record drawing reflecting elevations for, as-built subgrade, and final grade at each grid intersection shall be submitted to the Engineer.

1.05 SUBMITTALS

- A. Submit name and address of surveyor and professional engineer to the Engineer.
- B. On request of the Engineer, submit documentation to verify accuracy of field engineering work.
- C. Submit certificate signed by registered engineer or surveyor certifying that elevations and locations of improvements are in conformance with the Contract Documents, or if not in conformance, certify as to variances from the Contract Documents.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01065

PERMITS AND FEES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Unless otherwise specified, the Contractor shall obtain and pay for all permits and licenses related to the work, including but not limited to, _____, ~~as provided for in the General Conditions~~ except as otherwise provided herein.

B. Permits by Owner: Prior to the start of construction, the Owner has obtained the following permit(s) from the following agency(s):

1. Florida Department of Environmental Protection (FDEP) Permit to Construct
- Permit No. _____.

The Contractor will be issued copies of all permits obtained by the Owner at the preconstruction conference.

C. Permits by Contractor: Prior to construction, the Contractor shall pay for and obtain all other local government permits and fees, e.g., licenses, permit fees, impact fees, inspection fees, etc.

A copy of the permits shall be posted at the site at all times during construction. The Contractor shall abide by the permit conditions at all times.

D. Hardee County permits shall be obtained in such a manner as to facilitate partial utilization segments of the Project prior to completion of all Work. Separate, or "phased", permits may be required and temporary electrical connection permit will be required.

E. Work 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

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SECTION 01090

REFERENCE STANDARDS

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

- A. General provisions of Contract, including General and Supplementary Conditions.
- B. Division 1 through Division 16 Specification Sections.

1.02 SECTION INCLUDES

- A. Administrative requirements for compliance with governing regulations, codes and standards.

1.03 REFERENCE STANDARDS

- A. For Products specified by reference to an association or trade standard, comply with requirements and recommendations stated in that standard, except when requirements are modified by the Contract Documents, or applicable codes establish stricter standards. In case of a conflict between referenced specifications or standards, the one having the more stringent requirements shall govern.
- B. Where compliance with an industry standard is required, comply with standard in effect as of date of Contract Documents except when a particular date of a standard is indicated.
- C. Each entity engaged in construction on the Project is required to be familiar with industry standards applicable to that entities' construction activity. Copies of applicable standards are not bound with the Contract Documents.
- D. Where copies of standards are needed for performance of a required construction activity, the Contractor shall obtain copies directly from the publication source.

1.04 SCHEDULE OF TRADE REFERENCES

- A. Acronyms or abbreviations which may be used in the Specifications or other Contract Documents mean the recognized name of the trade association, standards generating organization, authority having jurisdiction or other entity applicable to the context of the text provision.

AA	Aluminum Association
AABC	Associated Air Balance Council
AAMA	American Architectural Manufacturer's Association
AAN	American Association of Nurserymen
AASHTO	American Association of State Highway and Transportation Officials
ABPA	Acoustical and Board Products Association
ACI	American Concrete Institute
ACIL	American Council of Independent Laboratories
ACPA	American Concrete Pipe Association
ADC	Air Diffusion Council
AGA	American Gas Association
AHA	American Hardboard Association
AHAM	Association of Home Appliance Manufacturers
AI	Asphalt Institute
AIA	American Institute of Architects
AIHA	American Industrial Hygiene Association
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
ALI	Associated Laboratories
ALSC	American Lumber Standards Committee
AMCA	Air Movement and Control Association
ANSI	American National Standards Institute
APA	American Plywood Association
API	American Petroleum Institute
APWA	American Public Works Association
ARI	Air Conditioning and Refrigeration Institute
AREA	American Railway Engineering Association
ARMA	Asphalt Roofing Manufacturers Association
ASA	Acoustical Society of America
ASC	Adhesive and Sealant Council
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASPE	American Society of Plumbing Engineers
ASSE	American Society of Sanitary Engineering
ASTM	American Society for Testing and Materials
AWI	Architectural Woodwork Institute
AWPA	American Wood Preservers' Association
AWPB	American Wood Preservers Bureau
AWS	American Welding Society

AWWA	American Water Works Association
BHMA	Builders' Hardware Manufacturers Association
BIA	Brick Institute of America
CAGI	Compressed Air and Gas Institute
CBM	Certified Ballast Manufacturers Association
CDA	Copper Development Association
CGA	Compressed Gas Association
CISPI	Cast Iron Soil Pipe Institute
CRI	Carpet and Rug Institute
CRSI	Concrete Reinforcing Steel Institute
CTI	Ceramic Tile Institute of America
DHI	Door and Hardware Institute
DLPA	Decorative Laminate Products Association
EIA	Electronic Industries Association
EIMA	Exterior Insulation Manufacturers Association
FCI	Fluid Controls Institute
FGMA	Flat Glass Marketing Association
FM	Factory Mutual Engineering and Research
FTI	Facing Tile Institute
GA	Gypsum Association
HEI	Heat Exchange Institute
HI	Hydronics Institute
HMA	Hardwood Manufacturers Association
ICEA	Insulated Cable Engineers Association Inc.
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronic Engineers
IESNA	Illuminating Engineering Society of North America
IGCC	Insulating Glass Certification Council
ILI	Indiana Limestone Institute of America
IRI	Industrial Risk Insurers
ISA	Instrument Society of America
LPI	Lightning Protection Institute
MBMA	Metal Building Manufacturer's Association
MCAA	Mechanical Contractor's Association of America
MIA	Marble Institute of America
ML/SFA	Metal Lath/Steel Framing Association
MSS	Manufacturers Standardization Society of the Valve and Fittings Industry
NAAMM	National Association of Architectural Metal Manufacturers
NAPA	National Asphalt Pavement Association
NAPF	National Association of Plastic Fabricators (Now DLPA)

NBGQA	National Building Granite Quarries Association
NBHA	National Builder's Hardware Association (Now DHI)
NCMA	National Concrete Masonry Association
NCRPM	National Council on Radiation Protection and Measurement
NEC	National Electric Code
NECA	National Electrical Contractors Association
NEII	National Elevator Industry, Inc.
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association
N.F.P.A.	National Forest Products Association
NHLA	National Hardwood Lumber Association
NLGA	National Lumber Grades Authority
NOFMA	National Oak Flooring Manufacturers Association
NPA	National Particleboard Association
NPCA	National Paint and Coatings Association
NRCA	National Roofing Contractors Association
NSF	National Sanitation Foundation
NTMA	National Terrazzo and Mosaic Association
NWMA	National Woodwork Manufacturers Association (Now NWWDA)
NWWDA	National Wood Window and Door Association (Formerly NWMA)
PCA	Portland Cement Association
PCI	Prestressed Concrete Institute
PDI	Plumbing and Drainage Institute
PEI	Porcelain Enamel Institute
RFCI	Resilient Floor Covering Institute
RIS	Redwood Inspection Service
RMA	Rubber Manufacturers Association
SDI	Steel Deck Institute
S.D.I.	Steel Door Institute
SGCC	Safety Glazing Certification Council
SHLMA	Southern Hardwood Lumber Manufacturers Association (HMA)
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joist Institute
SMACNA	Sheet Metal and Air Conditioning Contractor's National Association
SPIB	Southern Pine Inspection Bureau
SPRI	Single Ply Roofing Institute
SSPC	Steel Structures Painting Council
SWI	Steel Window Institute
TCA	Tile Council of America
TIMA	Thermal Insulation Manufacturer's Association
TPI	Truss Plate Institute

UL	Underwriters Laboratories
WCLIB	West Coast Lumber Inspection Bureau
WCMA	Wall Covering Manufacturers Association
WRI	Wire Reinforcement Institute
WSC	Water Systems Council
WSFI	Wood and Synthetic Flooring Institute
WWPA	Western Wood Products Association
W.W.P.A.	Woven Wire Products Association

1.05 SCHEDULE OF U.S. GOVERNMENT AGENCY REFERENCES

- A. Acronyms or abbreviations referenced in the Contract Documents indicate names of standard or Specification producing agencies of the federal government.

CE	Corps of Engineers (U.S. Department of the Army)
CFR	Code of Federal Regulations
CPSC	Consumer Product Safety Commission
CS	Commercial Standard
DOC	Department of Commerce
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration (U.S. Department of Commerce)
FCC	Federal Communications Commission
FHA	Federal Housing Administration (U.S. Department of Housing and Urban Development)
FS	Federal Specification (General Services Administration)
GSA	General Services Administration
MIL	Military Standardization Documents (U.S. Department of Defense)
NBS	National Bureau of Standards (U.S. Department of Commerce)
OSHA	Occupational Safety and Health Administration (U.S. Department of Labor)
PS	Product Standard of NBS (U.S. Department of Commerce)
REA	Rural Electrification Administration (U.S. Department of Agriculture)
USDA	U.S. Department of Agriculture
USPS	U.S. Postal Service

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION

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Section 01100

SPECIAL PROJECT PROCEDURES

PART 1 - GENERAL

1.01 UTILITY CROSSINGS

- A. It is intended that wherever existing utilities such as gas, electric, storm drain, or other service lines must be crossed, deflection of the pipe within recommended limits and cover shall be used to satisfactorily clear the obstruction unless otherwise indicated on the Drawings. However, when in the opinion of the Owner or Engineer this procedure is not feasible he may direct the use of fittings for a utility crossing as detailed on the Drawings.

1.02 WATER TIGHTNESS

- A. Special precautions shall be taken in the curing of concrete to reduce concrete cracking. Procedure and manner in which any leaks are repaired must be accepted by the Engineer for compliance with the Contract Documents prior to any concrete work.

1.03 PUBLIC NUISANCE

- A. The Contractor shall not create a public nuisance including, but not limited to, encroachment on adjacent lands, flooding of adjacent lands, or excessive noise.
- B. No extra charge may be made for time lost due to work stoppage resulting from the creation of a public nuisance.

1.04 SUSPENSION OF WORK DUE TO WEATHER

- A. During inclement weather, all work which might be damaged or rendered inferior by such weather conditions shall be suspended by the Owner ~~as specified in the General Conditions~~. The orders and decisions of the Owner as to suspensions shall be final and binding. During suspension of the work from any cause, the work shall be suitably covered and protected so as to preserve it from injury by the weather or otherwise; and, if the Owner shall so direct, the rubbish and surplus materials shall be removed.

1.05 SPECIAL REQUIREMENTS

- A. The following requirements shall govern:
 - 1. No additional payment will be made for pumping or other difficulties encountered due to water.

2. The Contractor shall, prior to interrupting a utility, service (water, sewer, etc.) for the purpose of making cut-ins to the existing lines or for any other purposes, contact the Owner and make arrangements for the interruption which will be satisfactory to the Owner.
3. All material delivered to the job site shall be properly protected from dirt, dust, dampness, water and any other condition detrimental to the life of the material from the date of delivery to the time that the material is installed and the Owner assumes beneficial occupancy.
4. From investigations, including surveys made at the site, it is assumed that physical conditions are approximately as indicated on the Drawings, but the nature of the materials below the surface, the depth to satisfactory foundations, or the stability of beds or banks, are not guaranteed.
5. Certain information regarding the reputed presence, size, character and location of existing underground structures, pipes and conduits has been shown on the Contract Drawings. There is no certainty of the accuracy of this information, and the location of underground structures shown may be inaccurate and other obstructions than those shown may be encountered. The Contractor hereby distinctly agrees that the Owner and Engineer are not responsible for the correctness or sufficiency of the information given; that in no event is this information to be considered as a part of the Contract; and that Contractor shall have no claim for delay or extra compensation on account of incorrectness of information regarding obstructions either revealed or not revealed by the Drawings; and that Contractor shall have no claim for relief from any obligation or responsibility under this Contract in case the location, size, or character of any pipe or other underground structure is not as indicated on the Drawings, or in case any pipe or other underground structure is encountered that is not shown on the Drawings, as determined by the Owner/Engineer.

1.06 RELOCATIONS

- A. The Contractor shall be responsible for the relocation of structures, including but not limited to light poles, signs, sign poles, fences, piping, conduits and drains that interfere with the positioning of the work as set out in the Drawings. The cost of all such relocations shall be included in the bid. Contractor shall install any test pits required to identify potential points of interference.

1.07 FLORIDA DEPARTMENT OF TRANSPORTATION RIGHTS-OF-WAY

- A. The Contractor shall strictly adhere to the requirements of the Florida Department of Transportation where construction work is in a right-of-way under the jurisdiction of the State of Florida.

- B. The Contractor shall take care to avoid any unreasonable traffic conflicts due to the work in road rights-of-way.

1.08 JURISDICTIONAL DISPUTES

- A. It shall be the responsibility of the Contractor to pay all costs required to perform any of the Work in order to avoid work stoppages and delays to the project.

1.09 PUMPING

- A. The Contractor, with his own equipment, shall do all pumping necessary to prevent flotation of any part of the structures and other appurtenances during construction operations. (See also Section 02140 - Dewatering)
- B. The Contractor shall, for the duration of the contract and with his own equipment, pump out water which may seep or leak into the manholes and other appurtenances. All construction shall be kept dry at all times. The extent of pumping required will be determined by the Engineer.

1.10 ADDITIONAL PROVISIONS

- A. Before commencing work, the Contractor shall notify the Owner, in writing, at least 10 calendar days in advance of the date proposed to commence such work.
- B. The Contractor shall provide at his own cost all necessary temporary facilities for access to, and for protection of, all existing structures. The Owner's personnel must have ready access at all times to existing work areas. The Contractor is responsible for all damage to existing structures, equipment, and facilities caused by his construction operations, and must repair all such damage when and as ordered by the Owner.

1.11 HAULING AND CONSTRUCTION OPERATIONS ON SITE PROPERTY

- A. The Contractor shall conduct access, hauling, filling and storage operations as specified herein and as shown on the Contract Drawings.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Contractor will schedule and administer a preconstruction conference, periodic construction progress meetings, and specially called meetings throughout the progress of the work.
 - 1. Prepare agenda for meetings.
 - 2. Make physical arrangements for meetings.
 - 3. Preside at meetings.
 - 4. Provide meeting minutes within 3 days to Engineer and Owner for review.
- B. Representatives of contractors, subcontractors and suppliers attending meetings shall be qualified and authorized to act on behalf of the entity each represents.
- C. The Engineer shall attend meetings to ascertain that work is expedited consistent with Contract Documents and construction schedules.
- D. Related Work Described Elsewhere:
 - 1. Section 01310: Progress Schedule and Report.
 - 2. Section 01340: Shop Drawings, Working Drawings, and Samples.
 - 3. Section 01720: Project Record Documents.

1.02 PRECONSTRUCTION CONFERENCE

- A. A preconstruction conference shall be scheduled by the Engineer.
- B. Location: The location of the conference shall be a central site, convenient for all parties, designated by the Engineer.
- C. Attendance Requested:
 - 1. Owner's representative.
 - 2. Resident project representative (RPR).
 - 3. Engineer and his professional consultants.
 - 4. Contractor's representative.
 - 5. Subcontractor's representative.

6. Supplier's representative.
7. Others, as appropriate.
8. Permitting agencies.

D. Suggested Agenda:

1. Project schedule.
2. Critical work sequencing: Relationships and coordination with other contracts and/or work and continuing landfill operation.
3. Major equipment deliveries and priorities.
4. Project coordination and control.
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.
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. Staking of work.
22. Project inspection.
23. Labor requirements.
24. Laboratory testing of material requirements.
25. Inventory of material stored on site provisions.
26. Requirements of railroads, highway departments, and other organizations.
27. Rights-of-way and easements.
28. Housekeeping procedures.
29. Liquidated damages.

30. Posting of signs.
31. Pay request submittal dates.
32. Equal opportunity requirements.
33. Permits.

1.03 PROGRESS MEETINGS

- A. Regular periodic construction progress meetings will be scheduled unless more frequent meetings are required. The progress meetings will be held every week with the first meeting one week after the preconstruction meeting or one week or less after the date of Notice to Proceed.
- B. Meetings shall be held as required by progress of the work.
- C. Location of the meetings: RPR's Field Office, or at other locations selected by the Engineer.
- D. Attendance:
 1. Engineer and his professional consultants (as needed).
 2. Contractor.
 3. Owner's representative.
 4. Subcontractors (as appropriate to the agenda).
 5. Suppliers (as appropriate to the agenda).
 6. Others (as appropriate).
- E. 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 the Construction Schedule.
 5. Review of off-site fabrication and 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. Shop Drawing submittals.
 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.

- F. The Contractor shall administer construction progress meetings and shall study previous meeting minutes and current agenda items, in order to be prepared to discuss pertinent topics regarding progress of the work.

- G. 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 REQUIREMENTS INCLUDED

- A. The Contractor shall submit to the Engineer for review, such working drawings, shop drawings, test reports and data on materials, material samples materials list, certificates and affidavits as required for 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.
- B. Within ten (10) 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 suppliers 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 fully in accordance with the Specifications.
- C. The Contractor shall maintain an accurate updated submittal log and will bring this log to each scheduled progress meeting with the Owner and the Engineer. This log shall include the following items:
 - 1. Submittal-Description and Number assigned.
 - 2. Date submitted to Engineer.
 - 3. Date returned to Contractor (from Engineer).
 - 4. Status of Submittal (Reviewed, Not Reviewed, Rejected)
 - 5. Date of Resubmittal and Return (as applicable).
 - 6. Projected date of delivery to site.
 - 7. Specification Section.
 - 8. Drawings Sheet Number.

1.02 CONTRACTOR'S RESPONSIBILITY

- A. The Contractor shall 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 and signature showing that they have been so checked and by affixing the stamp that they comply to the Contract Documents unless exceptions are given. Shop drawings submitted to the Engineer without the Contractor's stamp and signature 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. Shop drawing submittals shall not be used as a vehicle for requesting approval of substitute or alternative materials. Substitution requests will be considered only when submitted in accordance with Section 01600.

- B. The Contractor shall stamp each shop drawing with a standard stamp. The stamp will verify the Contractor has reviewed the information included in the shop drawing. In addition, the stamp will note any variation from the Contract Documents. The Contractor's stamp shall be submitted to the Engineer for acceptance fourteen (14) days prior to construction or submittal of shop drawings. The Engineer will only review shop drawings which have an Engineer-accepted stamp. (See Figure 01340-1).
- C. The Contractor shall determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance with Specifications.
 - 5. Conformance with drawings and details.
- D. 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. This schedule shall indicate those that are critical to the progress schedule.
- E. The Contractor shall not begin any work covered by a drawing, data, or a sample returned for correction until a revision or correction thereof has been reviewed and returned by the Engineer, with no exceptions.
- F. The Contractor shall submit to the Engineer all drawings and schedules sufficiently in advance of construction requirements to provide no less than thirty (30) calendar days for checking and appropriate action from the time the Engineer receives them. No extension of contract time will be authorized because of failure to transmit submittals to the engineer sufficiently in advance of the work to permit processing.
- G. All submittals shall be accompanied by a transmittal letter prepared in duplicate containing the following information:
 - 1. Date.
 - 2. Project Title and Number.
 - 3. Contractor's name and address.

Figure 01340 - 1

Recommended Contractor's
Shop Drawing Stamp

(OWNER'S NAME) (PROJECT NAME)	
SHOP DRAWING NO.: _____	
SPECIFICATION SECTION: _____	
WITH RESPECT TO THIS SHOP DRAWING OR SAMPLE, I HAVE DETERMINED AND VERIFIED ALL QUANTITIES, DIMENSIONS, SPECIFIED PERFORMANCE CRITERIA, INSTALLATION REQUIREMENTS, MATERIALS, CATALOG NUMBERS, AND SIMILAR DATA WITH RESPECT THERETO AND REVIEWED OR COORDINATED THIS SHOP DRAWING OR SAMPLE WITH OTHER SHOP DRAWINGS AND SAMPLES AND WITH THE REQUIREMENTS OF THE WORK AND THE CONTRACT DOCUMENTS.	
<input type="checkbox"/>	NO VARIATION FROM CONTRACT DOCUMENTS
<input type="checkbox"/>	VARIATION FROM CONTRACT DOCUMENTS AS SHOWN
(CONTRACTOR'S NAME) (CONTRACTOR'S ADDRESS)	
BY: _____	DATE: _____
AUTHORIZED SIGNATURE	

4. The number of each Shop Drawing, Product Data, and Sample submitted.
 5. Notification of deviations from Contract Documents.
 6. Submittal Log Number conforming to Specification Section Numbers.
- H. The Contractor shall submit four (4) 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 four (4) sets. All blueprint shop drawings shall be submitted with one (1) set of mylar reproducibles and four (4) sets of prints. The Engineer will review the blueprints and return to the Contractor the set of marked-up mylar reproducibles with appropriate review comments. All blueprint shop drawings, when practical, shall be 24 inch by 36 inch in size.
- I. 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.

1.03 ENGINEER'S REVIEW OF SHOP DRAWINGS

- A. The Engineer's review of drawings, data and samples submitted by the Contractor will include only general conformity with the design concept of the Project and with the information given in the contract documents. The Engineer's review and exceptions, if any, will not constitute approval of dimensions, quantities, and details of the material 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 "REJECTED - 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 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. No partial submittals will be reviewed. Submittals not complete will be returned to the Contractor for resubmittal. Make all submittals in groups containing all associated items as indicated in specific Specifications Sections. All drawings, schematics, supplier's product data, certifications and other shop drawing submittals required 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 which become an integral part of the Project. These drawings shall be complete and detailed. Shop Drawings shall consist of setting and schedule drawings and supplier's scale drawings. Descriptive literature, and performance and test data, shall be considered only as supportive to required Shop Drawings as defined above.
- B. Supplier's 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 material.
 3. Number and title of the shop drawing.
 4. Date of shop drawing or revision.
 5. Name of Contractor and subcontractor submitting drawing.
 6. Name of Supplier.
 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 for any reason, 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, they shall not be relieved of the responsibility for executing the work in accordance with the Contract.
- F. Data on materials and include, without limitation, materials lists, catalog data sheets, cuts, materials of construction and similar descriptive material. Materials lists shall give, for each item thereon, the name and location of the supplier, trade name, catalog reference, size and all other pertinent data.
- G. All suppliers who proposed to furnish 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 material has been installed and has been in operation for a period of at least one (1) year.
- H. 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 support of open cut excavation, utilities, ground water control systems, falsework and any other work as may be required for construction but is not 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 for information only, not review, where required by the Contract Documents or requested by the Engineer, and shall be submitted at least thirty (30) 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. Review of working drawings by the Engineer 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.
- D. Submittals that relate to the means, methods, techniques, sequencing, procedures, or safety programs of the contractor will be received by the Engineer for information only. A review of the information will not be conducted. These submittals that will not be reviewed include:
 - 1. Fit-up of parts
 - 2. Shoring and bracing
 - 3. Constructibility tolerances
 - 4. Field measurements
 - 5. De-watering plans, except with respect to the requirements of the technical specification
 - 6. False work forming plans

1.06 SAMPLES

- A. The Contractor shall furnish, for the approval of 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 after review by the engineer and required corrections are made.
- B. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product. 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 Represented.
 - 4. Place of Origin.
 - 5. Name of Producer and Brand (if any).
 - 6. Location in Project.
- D. The Contractor shall prepare a transmittal letter in triplicate for each shipment of samples containing the information required in paragraph 1.06 B. 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 on the project and shall not be construed to change or modify any Contract requirements.

- E. Samples not destroyed in testing shall be sent to the Engineer or stored at the site of the work. Materials incorporated in work shall match the Engineer reviewed samples. Samples which failed testing will be returned to the Contractor at his expense, if so requested at time of submission.

1.07 CERTIFICATES AND AFFIDAVITS

- A. Where specified in the Contract Documents that a certificate or affidavit be submitted to the Engineer for a particular product or product component, such submittals shall be made in accordance with the following:
 - 1. For Installation: A certificate of compliance shall indicate that the material has been properly installed in compliance with supplier's instructions. Certificate shall be provided by the supplier's representative.
- B. Each certificate shall include a sworn statement by an official of the company originating the certificate attesting to the truth and accuracy of all information contained in the certificate. If such attestation of truth and accuracy cannot be included in the certificate itself, it must be provided as an affidavit accompanying the certificate.

1.08 ALTERNATIVES TO SPECIFIED PRODUCTS

- A. The Contract Documents may indicate the name of a trade name or a material to be used in the Contract. Reference made to a particular product of the supplier is made to identify a particular design, quality, construction, arrangement, or style.
- B. Where the Contractor proposes to use a substitute product for that specified, complete information on such substitute product including all necessary redesign of the material or any other part of the Contract requiring modification as a result of the use of the requested substitute shall be submitted to the Engineer, for review. All such redesign and all new drawings and detailing required as a result thereof shall be prepared by the Contractor at his own expense, including regulatory permit acquisition for the modifications. Requests for additional money for such substitution will not be considered.
- C. If the Contractor proposes to provide products as "equals" to those specified, it shall be his responsibility to furnish complete, specific, detailed information to the Engineer from the supplier of the product he proposes to provide in which the requirements of the Contract Documents are shown to be met. This shall consist of a point-by-point comparison of the Contract requirements with the product proposed to be provided. The burden of responsibility in furnishing this information is with the Contractor. If

incomplete or irrelevant data is submitted as evidence of compliance with this subparagraph, the request for approval to provide this specific substitute product will be denied and no further submission will be considered.

1.09 MISCELLANEOUS DATA

- A. Any other submittals required by these Specifications but not directly addressed under this Section shall be submitted in accordance with the requirements for the shop drawings.

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.
- 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 inch x 11 inch or 8-1/2 inch by 14 inch 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 major line item, list sub-values of major products or operations under the 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
- D. For each line item which has installed value of more than \$50,000, breakdown costs to list major products or operations under each item.
- E. Round off figures to nearest dollar
- F. 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 01380

CONSTRUCTION PHOTOGRAPHS

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. Scope of Work: The Contractor shall employ a competent photographer to provide color audio-video taping in VHS format of all construction areas prior to start of work and to take construction record photographs periodically during the course of the Work.

1.02 PHOTOGRAPHY REQUIRED

- A. Photographs shall be taken of all areas to be disturbed prior to beginning of construction. These photos shall be submitted to the Engineer prior to beginning any work.
- B. Photographs taken in conformance with this Section shall be furnished to the Engineer with each pay request.
- C. Photographs shall be taken at each of the major stages of construction.
- D. Photographs may be taken by the Contractor's personnel but must be of professional quality as herein specified. Photographs which are deemed unsatisfactory will be rejected and retakes will be required.
- E. Views and Quantities Required:
 - 1. As required for the Applications for Payment (Section 01027).
 - 2. Four (4) prints of one (1) view of each activity as directed by the resident project representative, up to a limit of ten activities photographed per month.
 - 3. Four (4) prints of five (5) views of overall project site per month, as directed by the resident project representative.
 - 4. Three (3) prints of three (3) 8x10 preliminary aerial photographs of the site upon final completion of the project.

F. Negatives:

1. The photographer shall maintain negatives of entire project and then shall convey the negatives to the Owner at the completion of the project.
2. Photographer shall agree to furnish additional prints to Owner and the Engineer at commercial rates applicable at time of purchase.

1.03 COSTS OF PHOTOGRAPHY

- A. The Contractor shall pay costs for specified photography and prints. Parties requiring additional photography or prints will pay photographer directly..

PART 2 - PRODUCTS

2.01 PRINTS

A. Type of Print:

1. Paper: Single weight, color print paper.
2. Finish: Smooth surface, glossy.
3. Size: 8 inch x 10 inch for construction photos

B. Identify each print on back, listing:

1. Name of project
2. Orientation of view
3. Date and time of exposure
4. Name and address of photographer
5. Photographer's numbered identification of exposure

PART 3 - EXECUTION

3.01 TECHNIQUE

- A. Factual Presentation.
- B. Correct exposure and focus.
 - 1. High resolution and sharpness
 - 2. Maximum depth-of-field
 - 3. Minimum distortion

3.02 VIEWS REQUIRED

- A. Photograph from locations to adequately illustrate condition of construction and state of progress.
 - 1. At successive periods of photography, take at least one photograph from the same overall view as previously photographed.
 - 2. Consult with the Engineer at each period of photography for instructions concerning views required.

3.03 DELIVERY OF PRINTS

- A. Deliver prints to the Engineer to accompany each Pay Estimate.
- B. Distribution of construction prints as soon as processed is anticipated to be as follows:
 - 1. Owner (two sets)
 - 2. Engineer (one set)
 - 3. Project record file (one set to be stored by Contractor until the end of the project which may be retained by the Contractor at his option).

END OF SECTION

SECTION 01410

TESTING AND TESTING LABORATORY SERVICES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. ~~Contractor~~ Engineer will employ and pay for services of an Independent Testing Laboratory to perform testing specifically indicated on the Contract Documents or specified in the Specifications. ~~Contractor~~ and may at any other time elect to have materials and equipment tested for conformity with the Contract Documents.
- B. Contractor shall cooperate with the laboratory to facilitate the execution of its required services.
- C. Related Requirements Described Elsewhere:
 - 1. Conditions of the Contract.
 - 2. Respective section of specifications: Certification of products.
 - 3. Each specification section listed: Laboratory tests required, and standards for testing.
 - 4. Testing laboratory inspection, sampling and testing is required for, but not limited to:
 - a) Geomembrane Materials (~~conformance testing~~)
 - b) Soil Compaction
 - c) Cast-in-Place Concrete

1.02 LABORATORY DUTIES: LIMITATIONS OF AUTHORITY

- A. Cooperate with Engineer and Contractor; provide qualified personnel promptly on notice.
- B. Perform specified inspections, sampling and testing of materials and methods of construction:
 - 1. Comply with specific standards (ASTM, AASHTO, et.al.).

2. Comply with requirements of Contract Documents.
- C. Promptly notify Engineer and Contractor of irregularities or deficiencies of work which are observed during performance of services.
- D. Promptly submit five (5) copies of reports of inspections and tests to Engineer, including:
 1. Date issued.
 2. Project title and Engineer's job number.
 3. Testing Laboratory name and address.
 4. Name and signature of inspector.
 5. Date of inspection or sampling.
 6. Record of temperature and weather.
 7. Date of test.
 8. Identification of product and specification section.
 9. Location in project.
 10. Type of inspection or test.
 11. Observations regarding compliance with Contract Documents.
- E. Perform additional services as required by owner.
- F. Laboratory is not authorized to:
 1. Release, revoke , alter, or enlarge on requirements of Contract Documents.
 2. Approve or accept any portion of work.
 3. Perform any duties of the Contractor.

1.03 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor to notify RPR forty-eight (48) hours prior to testing or inspection.
- B. Cooperate with laboratory personnel, provide access to Work, to manufacturer's operations.
- C. Secure and deliver to the laboratory adequate facilities of representational samples of materials proposed to be used and which require testing.
- D. Provide to the laboratory the preliminary design mix proposed to be used for concrete, and other materials mixes which require control by the testing laboratory.
- E. Materials and equipment used in the performance of work under this Contract are subject to inspection and testing at the point of manufacture or fabrication. Standard

specifications for quality and workmanship are indicated in the Contract Documents. The Engineer requires the Contractor to provide statements or certificates from the manufacturers and fabricators that the materials and equipment provided by them are manufactured or fabricated in full accordance with the standard specifications for quality and workmanship indicated in the Contract Documents. All costs of this testing and providing statements and certificates shall be a subsidiary obligation of the Contractor, and no extra charge to the Owner shall be allowed on account of such testing and certification.

F. Furnish incidental labor and facilities:

1. To provide access to Work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.
4. For storage and curing of test samples.

G. Notify laboratory sufficiently in advance of operations to allow for laboratory assignment of personnel and scheduling of tests.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01450
ENVIRONMENTAL PROTECTION

D.E.P.
APR 27 1998
SOUTHWEST DISTRICT
TAMPA

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Requirements for prevention of environmental pollution and damage as the result of construction operations under this Contract.

1.02 SYSTEM DESCRIPTION

- A. Environmental pollution and damage are defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic, cultural, and/or historical purposes.
- B. The control of environmental pollution and damage requires consideration of air, water, and land, and includes management of visual esthetics, noise, solid waste, radiant energy and radioactive materials, as well as other pollutants.

1.03 QUALITY ASSURANCE

- A. Establish and maintain quality control for environmental protection of all items set forth herein.
- B. Record on daily quality control reports or attachments thereto, any problems in complying with laws, regulations and ordinances, and corrective actions taken.
- C. Comply with all requirements under the terms and conditions set out in all permit(s) obtained by the Owner or Contractor.
- D. The RPR will notify the Contractor in writing of any observed noncompliance with the Federal, State, or local laws or regulations, permits and other elements of the Environmental Protection Plan.
 - 1. After receipt of such notice, inform the RPR of proposed corrective action and take such action as may be accepted.
 - 2. Failure to comply promptly will be grounds for suspension of the Work.

3. No time extensions shall be granted or costs or damages allowed for any such suspension.

1.04 SUBMITTALS

A. Environmental Protection Plan, including but not limited to, the following items:

1. A list of Federal, State, and local laws, regulations, and permits concerning environmental protection, pollution control, and abatement that are applicable to the proposed operations and the requirements imposed by those laws, regulations, and permits.
2. Methods for protection of features to be preserved within authorized work areas. Prepare a listing of methods to protect resources needing protection, i.e., trees, shrubs, grasses and ground cover, landscape features, air and water quality, fish and wildlife.
3. Procedures to be implemented to provide the required environmental protection and to comply with the applicable laws and regulations. Set out the procedures to be followed to correct pollution of the environment due to accident, natural causes or failure to follow the procedures set out in accordance with the environmental protection plan.
4. Permit or license, and the location of the solid waste disposal area.
5. Drawings showing locations of any proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials.
6. Environmental monitoring plans for the job site, including land, water, air, and noise monitoring.
7. Traffic control plan.
8. Methods of protecting surface and ground water during construction activities.
9. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of areas to be used.
10. Plan of borrow area(s).

11. Identify quality control personnel.
- B. Within ten (10) days of the date of the Notice to Proceed, submit the Environmental Protection Plan for acceptance by the Owner. Acceptance of the plan shall not relieve the Contractor of his responsibility for adequate and continuing control of pollutants and other environmental protection measures.

PART 2 - PRODUCTS - (NOT APPLICABLE)

PART 3 - EXECUTION

3.01 PREPARATION

- A. Do not begin ~~dredging dewatering~~ operations until the Environmental Protection Plan is accepted by the Owner.

3.02 PROTECTION OF ENVIRONMENTAL RESOURCES

- A. Protect the environmental resources within the project boundaries and those affected outside the limits of Work during the entire period of this Contract. Confine activities to areas defined by the Drawings and Specifications.
- B. Protection of Land Resources:
 1. Prior to the beginning of any construction, identify all land resources to be preserved within the Work area.
 2. Do not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, top soil, and land forms without special permission from the Owner.
 3. Do not fasten ropes, cables, or guys to any trees for anchorage unless specifically authorized. Where such special emergency use is permitted, provide effective protection for land and vegetation resources at all times.
- C. Work Area Limits:
 1. Prior to any construction mark the areas that are to be disturbed by the work to be performed under this Contract. Isolated areas within the Work area which are to be saved and protected shall also be marked or fenced.
 2. Monuments and markers shall be protected before construction operations commence.

3. Where construction operations are to be conducted during darkness, the markers shall be visible.
 4. Convey to all of personnel the purpose of marking and/or protection of all necessary objects.
- D. Protection of Landscape: Clearly identify by marking, fencing, or wrapping with boards, or any other accepted techniques, trees, shrubs, vines, grasses, land forms, and other landscape features indicated and defined on the Drawings to be preserved.
- E. Reduction of Exposure of Unprotected Erodible Soils:
1. Protect earthwork brought to final grade and back slopes as soon as practicable upon completion of rough grading.
 2. All earthwork shall be planned and conducted to minimize the duration of exposure of unprotected soils.
 3. Except in instances where the constructed feature obscures borrow areas, quarries and waste material areas, these areas shall not initially be cleared in total. Clearing of such areas shall progress in reasonably sized increments as needed to use the areas developed as accepted by the Owner.
- F. Temporary Protection of Disturbed Areas:
1. Utilize such methods as necessary to effectively prevent erosion and control sedimentation, including but not limited to the following.
 2. Control runoff from the construction site by construction of diversion ditches, benches, and berms to retard and divert runoff to protected drainage courses, and any measures required by area wide plans accepted under paragraph 208 of the Clean Water Act.
- G. Erosion and Sedimentation Control Devices:
1. Construct or install all temporary and permanent erosion and sedimentation control features as indicated or required.
 2. Maintain temporary erosion and sediment control measures such as berms, dikes, drains, sedimentation basins, grassing and mulching until permanent drainage and erosion control facilities are completed and operative.

- H. Location of Field Offices, Storage, and Other Contractor Facilities:
1. Place field offices, staging areas, stockpile storage, and temporary buildings in areas designated by Owner.
 2. Temporary movement or relocation of facilities shall be made only on acceptance by the Owner.
- I. Borrow Areas on the Owner's Property shall be managed to minimize erosion and to prevent sediment from entering nearby water courses or lakes.
- J. Disposal Areas on the Owner's Property shall be managed and controlled to limit disposed materials to areas designated on the Drawings and prevent erosion of soil or sediment from entering nearby water courses or lakes. Disposal areas shall be developed in accordance with the grading plan indicated on the Drawings.
- K. Control temporary excavations and embankments for plant and/or work areas to protect adjacent areas from despoilment.
- L. Disposal of Waste:
1. Dispose of solid wastes (excluding clearing debris) in containers which are emptied on a regular schedule. All handling and disposal shall be conducted to prevent contamination.
 2. ~~Transport all solid waste off property and dispose of it in compliance with Federal, State, and local requirements for solid waste disposal.~~ Transport all solid waste to Owner designated area on-site.
 3. Store chemical waste in corrosion resistant containers, removed from the work area and disposed of in accordance with Federal, State, and local regulations.
 4. Discarded materials other than those which can be included in the solid waste category shall be handled as directed by the RPR.

3.03 PROTECTION OF WATER RESOURCES

- A. Keep construction activities under surveillance, management, and control to avoid pollution of surface and ground waters. Special management techniques as set out herein shall be implemented to control water pollution.
- B. Conduct ~~dredging~~ dewatering and disposal operations in a manner to minimize

turbidity. Be responsible for monitoring turbidity as specified and to assure that State Water Quality Standards are met.

C. Washing and Curing Water:

1. Wastewaters directly derived from construction activities shall not be allowed to enter water areas.
2. Wastewaters shall be collected and placed in retention ponds where suspended materials can be settled out or the water evaporates so that pollutants are separated from the water.

D. Stream Crossings shall be controlled during construction. Crossings shall provide movement of materials or equipment which does not violate water pollution control standards of the Federal, State, or local government.

E. Monitor all water areas affected by construction activities.

3.04 PROTECTION OF FISH AND WILDLIFE RESOURCES

- A. Keep construction activities under surveillance, management, and control to minimize interference with, disturbance to, and damage of fish and wildlife.

3.05 PROTECTION OF AIR RESOURCES (Including Dust Control)

- A. The Contractor shall maintain all excavations, embankments, stockpiles, access roads, plant sites, waste areas, borrow areas, and all other work areas within or without the project boundaries free from dust which would cause the standards for air pollution to be exceeded, thus causing a hazard or nuisance to others. Approved temporary methods of stabilization consisting of sprinkling, to be approved, shall be repeated at such intervals as considered necessary to keep all parts of the disturbed areas at least damp at all times. If sprinkling is used, at all times the Contractor shall keep on the project site a sufficient amount of equipment and competent workmen to perform the specified dust control sprinkling operations. All equipment utilized shall be of safe design and of sufficient capacity for the intended work. Perform dust control as the work proceeds and whenever a dust nuisance or hazard occurs. Chemical treatment or light bituminous treatment will not be permitted.
- B. Keep construction activities under surveillance, management, and control to minimize pollution of air resources.
- C. All activities, equipment, processes and work operated or performed in accomplishing the specified construction shall be in strict accordance with the

applicable air pollution standards of the State of Florida (Florida Statute, Chapter 403 and others) and all Federal emission and performance laws and standards.

3.06 PROTECTION OF SOUND INTRUSIONS

- A. Keep construction activities under surveillance, and control to minimize damage to the environment by noise.

3.07 ADJUSTING AND CLEANING

- A. Clean up any area(s) used for construction.
- B. Restore all landscape feature damaged or destroyed during construction operations outside the limits of the accepted Work areas. Such restoration shall be in accordance with the Contractor's plan submitted to the Owner for acceptance.

3.08 MAINTENANCE OF POLLUTION CONTROL FACILITIES

- A. Maintain all constructed facilities and portable pollution control devices for the duration of the Contract or for that length of time construction activities create the particular pollutant.

3.09 TRAINING OF CONTRACTOR PERSONNEL IN POLLUTION CONTROL

- A. Train personnel in all phases of environmental protection.
- B. Include methods of detecting and avoiding pollution, familiarization with pollution standards, both statutory contractual, and installation and care of facilities to insure adequate and continuous environmental pollution control.
- C. Train and inform quality control and supervisory personnel in the proper use of monitoring devices and abatement equipment, and Federal, State, and local laws, regulations, and permits, as listed in the Environmental Protection Plan submitted by the Contractor.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Work included: Provide temporary facilities required which may include, but are not necessarily limited to the following:
1. Temporary water source and service
 2. Temporary electrical source and service
 3. Temporary sanitary facilities
 4. Owner/Engineer's field office
 5. Telephone
 6. Storage sheds
 7. Temporary Controls

1.02 WATER

- A. Furnish and install water service for use throughout construction period.
1. Water for construction purposes.
 2. Water for other purposes.
 - a) Testing.
 - b) Temporary sanitary facilities.
 - c) Cleaning.
 - d) Potable water source (separate).
- B. Maintain adequate volume of water for all purposes.

- C. Water Source: Contractor shall make all necessary arrangements to secure a source of water from the Owner or other source for all purposes.
- D. Maintain strict supervision of use of temporary services.
 - 1. Enforce conformance with applicable codes and standards.
 - 2. Enforce sanitary practices.
 - 3. Prevent abuse of services.
 - 4. Prevent wasteful use of water.
- E. Costs of Installation and Operation: Pay costs for water used by all trades.
- F. Requirements of Regulatory Agencies:
 - 1. Obtain, pay for permits, fees, deposits required by governing authorities.
 - 2. Comply with federal, state and local codes.

1.03 ELECTRICITY

- A. Furnish and install electric power service for construction needs throughout construction period.
 - 1. Power centers for miscellaneous tools and equipment used in construction work.
 - a) Locate so that power is available at any desired point with no more than 100 feet extension.
 - b) Provide weatherproof distribution box with minimum of four (4) 20 amp, 120 volt grounded outlets, with GFCI protection.
 - c) Provide circuit breaker protection for each outlet.
 - d) Provide equipment grounding continuity for entire system.
 - e) Users shall provide grounded, UL approved extension cords from power center to point of operations.
 - 2. Power for construction equipment.
 - 3. Power for testing and checking equipment.

4. Power for welding units and for other equipment having special power requirements.
 5. Power for Contractor's, Subcontractor's, and RPR's field offices.
- B. Capacity:
1. Adequate electrical service for construction use by all trades during construction period.
 2. Notify Power Company if unusually heavy loads such as welding, and other special power requirements, will be connected.
 - a) Provide special circuits for heavy load requirements.
 - b) Do not overload any circuit.
- C. Power Source: Provide minimum 120 volt, single phase, 60 hertz power service to project site. The use of portable generators is allowed, but it is recommended to secure temporary power from a separate metered power supply.
- D. Maintain strict supervision of use of temporary services:
1. Enforce conformance with applicable standards.
 2. Enforce safe practices.
 3. Prevent abuse of services.
- E. Costs of Installation and Operation: Pay costs of temporary electrical power used.
- F. Requirements of Regulatory Agencies:
1. Obtain and pay for permits as required by governing authorities.
 2. Comply with applicable codes.
 - a) National Electrical Code.
 - b) National Electrical Safety Code.
 - c) National Fire Protection Association.
 - d) Federal, state and local codes and utility company regulations.

1.04 TEMPORARY SANITARY FACILITIES

A. Furnish and install temporary sanitary facilities for use throughout construction period.

1. Potable water for construction personnel:
 - a) Portable containers to dispense drinking water.
 - b) Maintain temperature between 45 degrees F (7.5 degrees C) and 55 degrees F (13 degrees C).
2. Enclosed toilet facilities for construction personnel.
3. General employee washing facilities.
4. Existing facilities shall not be used.

B. Minimum number of fixtures:

1. Toilets and Urinals
 - a) For less than 20 employees: 1 toilet
 - b) For 20 or more employees: 1 toilet and 1 urinal per 40 workers.
2. Washing Facilities: Adequate for number of employees, for type of work requiring washing facilities.

C. Maintain strict supervision of use of facilities:

1. Enforce conformance with applicable standards.
2. Maintain, service and clean facilities.
3. Enforce proper use of sanitary facilities.

D. Cost of Installation and Operation:

1. Pay costs of temporary sanitary facilities, including costs of installation, maintenance and removal.
2. Costs of Water: As specified in paragraph "WATER".
3. Pay service charges for use of portable units.

E. Facility Locations:

1. Within the project site.
2. Drinking Water: Convenient to work stations.
3. Toilet and washing facilities.
 - a) Secluded from public observation.
 - b) Convenient for use of personnel in relation to work stations.
4. Obtain acceptance of Engineer.

F. Enclosure for Toilet Facilities:

1. Weatherproof, sight-proof, sturdy temporary enclosures.
2. Insect-proof screening, adequate natural ventilation.

G. Requirements of Regulatory Agencies:

1. Obtain and pay for permits as required by governing authorities.
2. Comply with federal, state, and local codes, and utility company regulations.

1.05 OWNER/ENGINEER'S FIELD OFFICE

- A. Establish a temporary office for the exclusive use of the Owner's RPR and/or the Owner's Engineer at a mutually agreed site. This field office shall be used as the meeting place for all progress meetings.

1.06 TELEPHONE SERVICES

- A. Contractor shall make all necessary arrangements with the telephone utility for telephones in his offices at the site and for separate telephone lines in the field office of the Engineer.
- B. Subcontractors and others performing work or furnishing services at the site shall be permitted to use Contractor's telephone without charge for toll-free calls pertaining to the Work.

1.07 STORAGE SHEDS

- A. A storage area will be provided on the project site for use by the Contractor for storage of his materials, tools, equipment, office and other items necessary for construction. Under no circumstances will the Owner be responsible for the security of any property belonging to the Contractor, his subcontractors, or any of his workforce. The Contractor shall consult with the Owner as to the best location for setting up construction plant buildings and related facilities so as to expedite the Work.

1.08 TEMPORARY CONTROLS

A. Maintenance of Traffic

- 1. Contractor shall conduct his work to interfere as little as possible with public travel, whether vehicular or pedestrian. Whenever it is necessary to cross, obstruct, or close roads, driveways and walks, Contractor shall obtain prior permission from the Owner to obstruct traffic at the designated point.
- 2. In making open cut street crossing, Contractor shall not block more than one-half of the street at a time.

B. Barricades and Lights

- 1. All roads which are closed to traffic shall be protected by effective barricades on which shall be placed acceptable warning signs.
- 2. All open trenches and other excavations shall have suitable barricades and signs to provide adequate protection to the public. Obstructions, such as material piles and equipment shall be provided with similar warning signs.
- 3. All barricades, signs, and other protective devices shall be installed and maintained in conformity with applicable statutory requirements.

C. Fences

- 1. All existing fences affected by the work shall be maintained by Contractor until completion of the work. Fences which interfere with construction operations shall not be relocated or dismantled until written permission is obtained from the owner of the fence and the period the fence may be left relocated or dismantled has been agreed upon.
- 2. On completion of the work, Contractor shall restore all fences to their original or to a better condition and to their original location.

D. Protection of Existing Property

1. Contractor will be held responsible for any damage to existing structures, work, materials or equipment because of his operations and shall repair or replace any damaged structures, work, materials or equipment to the satisfaction of, and at no additional cost to the Owner.
2. Contractor shall protect all existing structures and property from damage and shall provide bracing, shoring, or other work necessary for such protection.
3. Contractor shall be responsible for all damage to streets, roads, curbs, sidewalks, highways, shoulders, ditches, embankments, culverts, bridges or other public or private property, which may be caused by transporting equipment, materials, or men to or from the work. Contractor shall make satisfactory and acceptable arrangements with the agency having jurisdiction over the damaged property concerning its repair or replacement.

E. Security

1. Contractor shall be responsible for protection of the site, and all work, materials, equipment and existing facilities thereon, against vandals and other unauthorized persons.
2. No claim shall be made against Owner by reason of any act of an employee or trespasser, and Contractor shall make good all damage to Owner's property resulting from his failure to provide security measures as specified.
3. Security measures shall be at least equal to those usually provided by Owner to protect his existing facilities during normal operation, but shall also include such addition security fencing, barricades, lighting and other measures as required to protect the site.

F. Access Roads

1. Contractor shall construct, grade, stabilize and maintain temporary access roads to various parts of the site as required to complete the project.

G. Drainage

1. The contractor shall keep all natural drainage and water courses unobstructed or provide equal courses effectively placed, and prevent accumulations of surface water.

H. Erosion and Siltation Control Measures

1. Adequate control of erosion and siltation of both a temporary and permanent nature on areas disturbed by this work shall be provided under this Contract, subject to the approval of the Engineer. There will be a joint on-site inspection prior to commencing work, with Contractor, State Engineer and County Officials and the Engineer to determine specific siltation control requirements.
2. Erosion control shall comply with all applicable State and County Regulations.

I. Parking

1. Contractor shall provide and maintain suitable parking areas for the use of all construction workers and other performing work by furnishing services in connection with the project, as required to avoid any need for parking personnel vehicles where they may interfere with public traffic, Owner's operations, or construction activities.

J. Emergencies

1. The Contractor shall display and update phone numbers of the local police, fire department, hospital, and emergency squad at all times and at all phones on site during the project.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Materials may be new or used, but must be adequate for purpose required, sanitary and must not violate requirements of applicable codes.
2. At Contractor's option, patented specialty products may be used, in compliance with applicable codes.

2.02 WATER

A. Drinking Water Facilities (Portable Containers):

1. Tightly closed, and equipped with dispensing tap.
2. Clearly label contents.

3. Do not use for other purposes.
4. Provide single-service disposable cups, with sanitary container for unused cups, and receptacles for used cups.

2.03 ELECTRICITY

- A. Provide required facilities, including transformers, conductors, poles, conduits, raceways, breakers, fuses and switches.
- B. Provide appropriate enclosures for environment in which used, in compliance with NEMA standards.

2.04 TEMPORARY SANITARY FACILITIES

A. Toilet Facilities

1. Portable Toilets; either:
 - a) Chemical toilets.
 - b) Recirculating toilets.
 - c) Combustion toilets.
2. Toilet Tissue: Provide at each toilet, on suitable dispenser.

2.05 OWNER/ENGINEER'S FIELD OFFICE

A. Specific Requirements:

1. Provide either a separate building or a trailer of at least 400 square feet of floor space for the exclusive use of the Owner/Engineer throughout the period of construction. Owner/Engineer building/trailer shall be in place with working utilities prior to any construction work.
2. It shall be weathertight, have a watertight floor at least 8 inches off the ground, and shall be insulated, have suitable screened ventilation and a solid door provided with a cylinder lock and three keys.
3. The office shall be provided with weekly janitor service, heating and AC equipment, electrical wiring, outlets, and fixtures suitable to light the tables and desk adequately.

4. Separate toilet facilities shall be provided within the office building or trailer for the exclusive use of the Engineer. Provide toilet paper and paper towels.

C. Furniture and Equipment:

1. One drafting table, 3 feet by 5 feet, and one adjustable drafting stool with back rest. Table shall have raise/lowering ability, tilt ability, parallel bar, and adjustable drafting light.
2. Three desks, about 3 feet by 5 feet, with chairs. Chairs shall be roller type with backs and arm rests.
3. Three additional desk chairs to match chairs furnished with desks.
4. One conference table, four (4) feet by eight (8) feet with six (6) portable chairs.
5. Plan rack, hanger type, suitable for holding up to ten sets of plans.
6. Two book shelf, metallic, 6 foot high, 4 foot wide, 1 foot deep, up to five adjustable shelf leaves.
7. Two four-drawer filing cabinets with locks.
8. One first aid kit.
9. Two fire extinguishers, non-toxic, dry chemical, meeting UL for Class A, B, & C fires.
10. Window air conditioning unit, 12,000 BTU (1 ton) rating.
11. Two steel waste paper baskets.
12. Bottled water cooler with replacement water bottles as required.
13. Plain paper FAX machine capable of producing full size, single sheet reproductions, Canon Model FAX-705, or equivalent with separate telephone line. Provide appropriate paper, as needed by Owner/Engineer.
14. Copy machine capable of multiple sheet reproductions, Xerox Model 3107 or equivalent, with reduction capability. Provide appropriate paper.
15. Answering Machine.

- D. Supply all fuel for heating and pay all electrical bills for the Owner's/Engineer's field office.

2.06 TELEPHONE

- A. Furnish and install a telephone in and telephone service to the Owner /Engineer's field office for the exclusive use of the Owner/Engineer. Provide two working telephone plugs in trailer/building, on either side of trailer/building. Provide two (2) touch-tone telephones.
- B. Pay all bills charged against the Owner /Engineer's telephone including installation charges, long distance, and all monthly charges throughout the construction period.

~~2.07 STORAGE SHEDS~~

- ~~A. A storage area will be provided on the project site for use by the Contractor for storage of his materials, tools, equipment, office and other items necessary for construction. The exact limits of the storage area will be designated in the field by the Engineer. The Contractor shall be fully responsible for the security of this area, including fencing, watchmen, and other means of security. Under no circumstances will the Owner be responsible for the security of any property belonging to the Contractor, his subcontractors, or any of his workforce.~~
- ~~B. The Contractor shall consult with the Owner as to the best location for setting up construction plant buildings and related facilities so as to expedite the Work.~~

PART 3 - EXECUTION

3.01 GENERAL

- A. Install work in a neat and orderly manner.
- B. Make structurally sound throughout.
- C. Maintain to provide continuous service.
- D. Modify and extend service as work progress requires.

3.02 WATER

- A. Locate piping and outlets.
 - 1. Provide service convenient to work stations.

2. Avoid interference with:
 - a) Traffic and work areas.
 - b) Materials handling equipment.
 - c) Storage areas.
- B. Do not run piping on floor or on ground.
- C. When necessary to maintain pressure, provide pumps, tanks, and compressors.

3.03 ELECTRICITY

- A. Service and distribution may be overhead or underground.
- B. Locate to avoid interference with:
 1. Traffic and work areas.
 2. Cranes.
 3. Material handling equipment.
 4. Storage areas.
- C. Do not run branch circuits on floor or on ground.
- D. Wire all safety devices specified for final operation of equipment.
- E. Check operation of safety devices.

3.04 PETROLEUM SPILL/LEAK CONTAINMENT

- A. Contractor shall provide a spill/leak containment vessel for above ground petroleum storage tanks. The containment vessels shall have a capacity exceeding 125 percent of the volume of the petroleum storage tank for which they are intended. Contractor shall provide written description and adequate drawings to the Engineer, in the form of a Shop Drawing, for review and comment prior to any containment installation.
- B. For concrete containment vessels, the concrete shall be air-entrained with a minimum of 4,000 psi compressive strength when delivered. Reinforced steel shall be Grade 40 with No. 4 bars on 12-inch centers each way.

- C. The containment vessel must contain an acceptable means of removing rain water or recovering spilled or leaked petroleum from the vessel. If a siphon arrangement is used, it shall be mounted on the wall of the vessel and must automatically break when the vessel empties. Then, the siphon must be manually primed the next time the contents are discharged.
- D. Anchor bolts must be furnished to tie-down the petroleum storage tank to prevent the flotation of an empty tank due to rain water.

3.05 TEMPORARY SANITARY FACILITIES

- A. Portable Toilets:
 - 1. Erect securely, and anchor to prevent dislocation.
 - 2. Service weekly or more often as necessary to prevent accumulation of wastes, and creation of unsanitary conditions.
 - 3. Shall be used unless sewer and water service can be provided to site.
- B. Washing Facilities: Provide faucets and other wash facilities suitable for the type of work requiring washing.

3.06 LOCATION OF CONSTRUCTION TRAILERS

- A. The Contractor shall locate trailers for construction purposes for the Contractor, his Subcontractors, and the ~~Owner~~ Engineer's use away from normal traffic use and view. The location of construction trailers will be as designated by Owner.

3.07 REMOVAL

- A. Completely remove temporary materials and equipment after the final completion inspection.
- B. Clean, and repair damage caused by installation and restore to specified, or original condition.

3.08 WASTE CONSTRUCTION MATERIALS

- A. The Contractor shall dispose of all waste construction material at a permitted waste facility. All associated cost for disposal shall be the Contractors.
- B. Waste Construction Material, which are accepted at the Owner's facility, may be disposed of in the Owner's facility.

- C. Waste construction materials shall be less than 4-feet in length.
- D. Waste Construction Materials disposed at the Owner's waste facility shall not be subject to tipping fees.
- E. The Contractor shall provide sufficient containers to collect and hold waste construction materials. Waste materials shall be collected on a daily basis.
- F. The Contractor shall dispose of waste construction material when containers are full. Transportation of the waste containers will be supplied by the Contractor.
- G. The waste containers shall be transported, by the Contractor, to the scalehouse to be weighed prior to disposal. The waste containers shall be transported, by the Contractor, to areas designated by the Owner.

END OF SECTION

SECTION 01568

TEMPORARY EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. The Work specified in this Section consists of providing, maintaining, and removing temporary erosion and sedimentation controls as necessary. All existing and foreseeable future conditions that affect the work inside and outside the construction limits must be acknowledged as the Contractor's responsibility.
- B. Temporary erosion controls include, but are not limited to, grassing, mulching, sodding, netting, watering and reseeding on-site surfaces and soil and borrow area surfaces and providing interceptor ditches or temporary drainage pipes at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the Owner.
- C. Temporary sedimentation controls include, but are not limited to, silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by the Owner.
- D. Contractor is responsible for providing effective temporary erosion and sediment control measures during construction or until final controls become effective. Contractor may, with approval from the Engineer, work outside the construction limits to establish a working erosion control system.

1.02 SUBMITTALS

- A. Submit to the Engineer for review prior to the start of construction, the erosion control procedures to be utilized for this project prior to construction. This shall be submitted in the form of a shop drawing titled "Erosion Control Plan", and shall address all items in this section.

PART 2 - PRODUCTS

2.01 EROSION CONTROL

- A. Netting Grade 1800 - Miramat, as manufactured by Mirafi or approved equal.
- B. Drainage Pipes - ADS N-12, or equal.

2.02 SEDIMENTATION CONTROL

- A. Bales - clean, seed-free cereal hay type.
- B. Netting - Envirofence, as manufactured by Mirafi or approved equal.
- C. Filter stone - crushed stone conforming to Florida Department of Transportation specifications.
- D. Concrete block - hollow, non-load bearing type.
- E. Concrete - exterior grade not less than one inch thick.

PART 3 - EXECUTION

3.01 EROSION CONTROL

- A. Minimum procedures for grassing are:
 - 1. Scarify slopes to a depth of not less than six inches and remove large clods, rock, stumps, roots larger than 1/2-inch in diameter, and debris.
 - 2. Sow seed within twenty-four (24) hours after the ground is scarified with either mechanical seed drills or rotary hand seeders.
 - 3. Apply mulch loosely and to a thickness of between 3/4-inch and 1-1/2 inches.
 - 4. Apply netting over mulched areas on sloped surfaces.
 - 5. Roll and water seeded areas in a manner which will encourage sprouting of seeds and growing of grass. Re-seed areas which exhibit unsatisfactory growth. Backfill and seed eroded areas.

3.02 SEDIMENTATION CONTROL

- A. Install and maintain silt dams, traps, barriers, and appurtenances as recommended by the manufacturer. Control systems which deteriorate and filter stone which is dislodged shall be replaced.

3.03 PERFORMANCE

- A. During construction, denuded areas are to be covered as soon as possible by mulch (such as straw, hay, synthetic fiber) or by sod or seed and mulch with temporary or permanent vegetation. Method selected will be initially at the Contractor's option.
- B. Areas to be developed (3 acres or greater) will require temporary sediment basins used as a positive remedy against downstream siltation. During development, permanent stormwater management (detention) ponds may be used in place of temporary sediment basins. Prior to final inspection, accumulated silt and debris shall be removed from the stormwater management ponds.
- C. Floating and/or staked silt barriers will be anchored in place to protect against accumulation of silt and sediment upstream and downstream from the work. The silt barriers will be placed so as to effectively control silt and sediment dispersion under the conditions present on this project. Silt fences will be installed where necessary outside limits of construction.
- D. All swales, ditches, channels, retention ponds and detention areas will be sodded or seeded as required as soon as possible.
- E. Contractor will be required to obtain all applicable dewatering permits required during construction.
- F. Methods used to control erosion and sedimentation will comply with applicable federal, State and local regulations.
- G. Should any of the temporary erosion and sediment control measures employed by Contractor fail to produce results which comply with the requirements of the State of Florida, Owner or Engineer; Contractor shall immediately take whatever steps are necessary to correct the deficiency at his own expense.

3.04 DUST CONTROL

- A. Execute work by methods to minimize raising dust from construction operations. Provide positive means to prevent air-borne dust from dispersing into atmosphere.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Material and equipment incorporated into the Work:

1. Conform to applicable specifications and standards.
2. Comply with size, make, type and quality specified, or as specifically approved in writing by Engineer.
3. Manufactured and fabricated products:
 - a) Design, fabricate and assemble in accordance with the best engineering and shop practices.
 - b) Manufacture like parts of duplicate units to standard sizes and gauges, to be interchangeable.
 - c) Two or more items of the same kind shall be identical, by the same manufacturer.
 - d) Products shall be suitable for service conditions.
 - e) Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved in writing.
4. Do not use material or equipment for any purpose other than that for which it is designed or is specified.

1.02 ACCEPTANCE OF MATERIALS

- ###### A.
- In the various detailed Sections of the Specifications where any item of equipment or product is specified by proprietary name or trade name, without the addition of such expressions as "or equal", it is to be understood that equal-quality equipment or products

of either a manufacturer named or of a manufacturer not named which meet the detailed requirements of the specifications, are intended, subject to the approval of the Engineer as to the equality thereof. Where a product is specified by naming only one product or manufacturer, or where "no substitution" is indicated, the specified product shall be used.

- B. Only new materials and equipment shall be incorporated in the work. All materials and equipment furnished by Contractor shall be subject to the inspection and acceptance of Engineer. No material shall be delivered to the work without prior acceptance of Engineer.
- C. Within ten (10) days after the Effective Date of the Agreement, Contractor shall submit to Engineer, data relating to materials and equipment he proposes to furnish for the work. Such data shall be in sufficient detail to enable Engineer to identify the particular product to form an opinion as to its conformity to the specifications.
- D. Facilities and labor for handling and inspection of all materials and equipment shall be furnished by Contractor. If Engineer requires, either prior to beginning or during progress of the work, Contractor shall submit samples of materials for such special tests as may be necessary to demonstrate that they conform to the specifications. Such samples shall be furnished, stored, packed and shipped as directed at Contractor's expense. Except as otherwise noted, Contractor shall make arrangements for and pay for the tests.
- E. Contractor shall submit data and samples sufficiently early to permit consideration and approval before materials are necessary for incorporation in the work. Any delay of approval resulting from Contractor's failure to submit samples or data promptly shall not be used as a basis of claim against Owner or Engineer.
- F. In order to demonstrate the proficiency of workers or to facilitate the choice among several textures, types, finishes and surfaces, Contractor shall provide such samples of workmanship or finish as may be required.
- G. The materials and equipment used on the work shall correspond to the accepted samples or other data.

1.03 SUBSTITUTIONS AND PRODUCT OPTIONS

- A. The substitution requirements of this Section are in addition to the requirements of the ~~General Conditions~~ and Supplementary Conditions.

- B. The intent of these Specifications is to provide Owner with a quality facility without discouraging competitive bidding. Substitutions may be submitted and will be evaluated as specified herein.
- C. The eContractor shall submit a separate request for each proposed substitution; 2 copies 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 Sum.
- D. During Bidding period, times for submittal of substitution requests are stated in the Instructions to Bidders.
- E. After Bidding period, up to 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.
- F. Do not order or install substitute products without written acceptance from the Architect/Engineer. Do not imply or indicate substitutions on shop drawings or product data submittals without a separate formal request.

- G. Engineer will determine acceptability of substitution. The burden of proof of acceptability of a proposed substitution is upon the submitter; information submitted must convince the reviewers 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.
- H. 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 ~~Architect~~ Engineer and their Consultants for evaluation and review of the proposed substitution.

1.04 MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION

- A. When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, obtain and distribute copies of such instructions to parties involved in the installation, including five copies to Engineer.
1. Maintain one set of complete instructions at the job site during installation and until completion.
- B. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
1. Should job conditions or specified requirements conflict with manufacturer's instructions, consult with Engineer for further instructions.
 2. Do not proceed with work without clear instructions.

- C. Perform work in accordance with manufacturer's instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.05 TRANSPORTATION AND HANDLING

- A. Arrange deliveries of products in accordance with construction schedules, coordinate to avoid conflict with work and conditions at the site.
 - 1. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible.
 - 2. Immediately on delivery, inspect shipments to assure compliance with requirements of Contract Documents and approved submittals, and that products are properly protected and undamaged.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage to products or packaging.

1.06 STORAGE AND PROTECTION

- A. The Contractor shall furnish a covered, weather-protected storage structure providing a clean, dry, noncorrosive environment for all mechanical equipment, valves, architectural items, electrical and instrumentation equipment, and special equipment to be incorporated into this project. Storage of equipment shall be in strict accordance with the "instructions for storage" of each equipment supplier and manufacturer including connection of heaters, placing of storage lubricants in equipment, etc. Corroded, damaged or deteriorated equipment and parts shall be replaced before acceptance of the project. Equipment and materials not properly stored will not be included in a payment estimate.
- B. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible.
 - 1. Store products subject to damage by the elements in weathertight enclosures such as buildings or trailers which have a concrete or wooden floor, a roof and fully closed walls on all sides.
 - 2. Maintain temperature and humidity within the ranges required by manufacturer's instructions, (ie. electrical and instrumentation equipment).

3. Protect mechanical and electrical equipment from being contaminated by dust, dirt and moisture.
 4. Store fabricated products above the ground, on blocking or skids, prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.
 5. Provide heated storage space for material which would be damaged by freezing.
 6. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.
 7. Prior to the installation of equipment it shall be stored at locations designated and approved by the Engineer.
- C. All materials and equipment to be incorporated in the work shall be handled and stored by Contractor before, during and after shipment in a manner to prevent warping, twisting, bending, breaking, chipping, rusting, and any injury, theft or damage of any kind whatsoever to the material or equipment.
- D. Cement, sand and lime shall be stored under a roof and off the ground and shall be kept completely dry at all times. All structural and miscellaneous steel, and reinforcing steel shall be stored off the ground or otherwise to prevent accumulations of dirt or grease, and in a position to prevent accumulations of standing water and to minimize rusting. Beams shall be stored with the webs vertical. Precast concrete beams shall be handled and stored in a manner to prevent accumulations of dirt, standing water, staining, chipping or cracking. Brick, block and similar masonry products shall be handled and stored in a manner to reduce breakage, chipping, cracking and spalling to a minimum.
- E. All materials which, in the opinion of Engineer, have become so damaged as to be unfit for the use intended or specified shall be promptly removed from the site of the work, and Contractor shall receive no compensation for the damaged material or its removal.
- F. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.
- G. Protection After Installation: Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove covering when no longer needed.

- H. The Contractor shall be responsible for all material, equipment and supplies sold and delivered to Owner under this Contract until final inspection of the work and acceptance thereof by Owner. In the event any such material, equipment and supplies are lost, stolen, damaged or destroyed prior to final inspection and acceptance, Contractor shall replace same without additional cost to Owner.
- I. Should Contractor fail to take proper action on storage and handling of equipment supplied under this Contract within seven days after written notice to do so has been given, Owner retains the right to correct all deficiencies noted in previously transmitted written notice and deduct the cost associated with these corrections from Contractor's Contract. These costs may be comprised of expenditures for labor, equipment usage, administrative, clerical, engineering and any other costs associated with making the necessary corrections.

1.07 SPECIAL TOOLS

- A. Manufacturers of equipment and machinery shall furnish any special tools (including grease guns or other lubricating devices) required for normal adjustment, operations and maintenance, together with instructions for their use. Contractor shall preserve and deliver to Owner these tools and instructions in good order no later than upon completion of the Contract.

1.08 STORAGE AND HANDLING OF EQUIPMENT ON SITE

- A. Attention shall be given to the storage and handling of equipment on site. As a minimum, the procedure outlined below shall be followed:
 - 1. Equipment shall not be shipped until approved by Engineer. The intent of this requirement is to reduce on-site storage time prior to installation and/or operation. Under no circumstances shall equipment be delivered to the site more than one month prior to installation without written authorization from Engineer. Equipment shipped to the site shall be stored in accordance with Storage and Protection Section herein. Operation and maintenance data as described in Section 01730 shall be submitted to Engineer for review prior to shipment of equipment.
 - 2. All equipment having moving parts such as gears, electric motors, etc. and/or instruments shall be stored in a temperature and humidity controlled building approved by Engineer, until such time as the equipment is to be installed.

3. All equipment shall be stored fully lubricated with oil, grease, etc. unless otherwise instructed by the manufacturer.
4. Manufacturer's storage instructions shall be carefully studied by Contractor and reviewed with Engineer by him. These instructions shall be carefully followed and a written record of this kept by the Contractor.
5. Moving parts shall be rotated a minimum of once weekly to insure proper lubrication and to avoid metal-to-metal "welding". Upon installation of the equipment, Contractor shall start the equipment, at least half load, once weekly for an adequate period of time to insure that the equipment does not deteriorate from lack of use.
6. Lubricants shall be changed upon completion of installation and as frequently as required thereafter during the period between installation and acceptance. Mechanical equipment to be used in the work, if stored for longer than ninety (90) days, shall have the bearings cleaned, flushed and lubricated prior to testing and startup, at no extra cost to Owner.
7. Prior to acceptance of the equipment, Contractor shall have the manufacturer inspect the equipment and certify that its condition has not been detrimentally affected by the long storage period. Such certifications by the manufacturer shall be deemed to mean that the equipment is judged by the manufacturer to be in a condition equal to that of equipment that has been shipped, installed, tested and accepted in a minimum time period. As such, the manufacturer will guarantee the equipment equally in both instances. If such a certification is not given, the equipment shall be judged to be defective. It shall be removed and replaced at Contractor's expense.

1.09 WARRANTY

- A. For all major pieces of equipment, submit a warranty from the equipment manufacturer as specified in Section 01740. The manufacturer's warranty period shall be concurrent with the Contractor's for one (1) year after issuance of Substantial Completion document.

1.10 SPARE PARTS

- A. Spare parts for certain equipment have been specified in the pertinent sections of the Specifications. Contractor shall collect and store all spare parts so required in an area to be designated by ~~Engineer~~ Owner. In addition, Contractor shall furnish Engineer an inventory listing all spare parts, the equipment they are associated with, the name and

address of the supplier, and the delivered cost of each item. Copies of actual invoices for each item shall be furnished with the inventory to substantiate the delivered cost.

1.11 GREASE, OIL AND FUEL

- A. All grease, oil and fuel required for testing of equipment shall be furnished with the respective equipment. Owner shall be furnished with a year's supply of required lubricants including grease and oil of the type recommended by manufacturer with each item of equipment supplied.
- B. Contractor shall be responsible for changing the oil in all drives and intermediate drives of each mechanical equipment after initial break-in of the equipment, which in no event shall be any longer than three weeks of operation.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

SUBSTITUTION REQUEST

PROJECT:

TO: Post, Buckley Schuh & Jernigan, Inc.
1560 Orange Ave.
Suite 700
Winter Park, FL 32789

DATE:

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 Seventy Dollars (\$70.00) 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 01650

START-UP

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Scope of Work: Provide material, personnel, and equipment as needed and as specified herein to perform the required start-up and demonstration tests.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PRELIMINARY MATTERS

- A. Start-up Certification: Prior to system start-up, successfully complete all testing required of the individual components of work. Submit six (6) copies of the MANUFACTURER'S CHECK-OUT CERTIFICATION form signed by Contractor, Subcontractor and the Manufacturer's representative. All copies shall be provided with the respective Operation and Maintenance Manual. This form shall be completed and submitted before Instruction in Operation to Owner or a request for final inspection.
- B. Demonstrate to the Engineer that all temporary jumpers and/or bypass have been removed and that all components are operating under their own controls as designated.
- C. Coordinate start-up activities with the Owner's operating personnel at the site and with the Engineer prior to commencing system start-up.

3.02 START-UP

- A. Confirm that all equipment is properly energized and that all switches and valves are set to their normal operating condition, and that the flow path through the new work is unobstructed.
- B. Initiate start-up in accordance with the operation and maintenance manual.
- C. Observe the component operation and make adjustments as necessary to optimize the performance of the Work.

- D. Coordinate with Owner before performing any adjustments desired or operational problems requiring debugging.
- E. Make adjustments as necessary.

3.03 START-UP DEMONSTRATION AND TESTING

- A. After all Work components have been constructed, field tested and started-up in accordance with the individual specifications and manufacturer requirements, perform the Start-Up Demonstration and Testing in the presence of the Engineer and the Owner. The demonstration shall be held upon completion of all systems at a date to be agreed upon in writing with the Owner.
- B. The start-up testing shall be conducted for two consecutive days. The Work must operate successfully during the two-day testing period in the manner intended. If the Work does not operate successfully, or if the start-up is interrupted due to other contracts, the problems will be corrected and the test will start over from day one. The party causing the interruption will be subject to the assessment of actual damages due to delay.
- C. During the demonstration, operate the Work, instruct designated plant operating personnel in the function and operation of the Work, and cause various operational circumstances to occur. Demonstrate the essential features of the equipment and its relationship to other equipment. Prior to the substantial completion, the Contractor shall submit a detailed schedule of operational circumstances. Coordination of the various contract schedules will be accomplished through the Engineer.
- D. The demonstration test procedures shall follow the sample DEMONSTRATION TEST PROCEDURES form provided at the end of this section. Provide similar test procedure forms for each section of the work to cover all aspects and features specified.
- E. Acceptability of the Work's performance will be based on the Work performing as specified, under these actual and simulated operating conditions as defined in the Contract Documents. The intent of the start-up demonstration and testing is for the Contractor to demonstrate to the Owner and the Engineer that the Work will function as a complete and operable system under normal as well as emergency operating conditions and is ready for acceptance.
- F. Demonstrate the essential features of the whole system as it applies to the Work, including the mechanical equipment, piping, structures, finishes, controls, instrumentation, power distribution and lighting systems. Use the approved procedures and circumstances to demonstrate the system. Any minor deficiencies found shall be noted and included on a punch list attached to the Certificate of Completed Demonstration. The system shall be demonstrated after completion of start-up tests. If circumstances arise that interrupt the test procedures (such as weather, unforeseen process

problems, or problems caused by the Contractor whether or not the problems are the fault of the Contractor, etc.), then the test shall be terminated and rescheduled to a later date after the problem is corrected. The test shall be run in its entirety if so directed by the Engineer.

- G. Certificate of Completed Demonstration: Submit six (6) copies of Certificate of Completed Demonstration memo signed by the Contractor, Subcontractor and Owner and insert one copy in each Operation and Maintenance Manual.

MANUFACTURER'S CHECK-OUT CERTIFICATION

OWNER:	<u>Hardee County, Florida</u>	No. Copies	<u>5</u>
ENGINEER:	<u>PBS&J, INC.</u>	No. Copies	<u>1</u> Date _____
ARCHITECT:	_____	No. Copies	_____
CONTRACTOR:	_____	No. Copies	_____ Check-out
FIELD:	_____	No. Copies	_____ Memo No. _____
OWNER:	_____	No. Copies	_____

PROJECT DATA

CONTRACT DATA

NAME: Hardee County Landfill
Leachate Storage Tank Facility

NUMBER: _____

LOCATION: Hardee County Landfill

OWNER: Hardee County, Florida

OTHER: _____

DATE: _____

DRAWING NO: _____

SPECIFICATION SECTION: _____

Name of Equipment Checked: _____

Name of Manufacturer of Equipment: _____

1. The equipment furnished by us has been checked on the job by us. We have reviewed (where applicable) the performance verification information submitted to us by the Contractor.
2. The equipment is properly installed, except for items noted below.*
3. The equipment is operating satisfactorily, except for items noted below.*
4. The written operating and maintenance information (where applicable) has been presented to the Contractor, and gone over with him in detail. Five (5) copies of all applicable operating and maintenance information and parts lists have been furnished to him for insertion in each of the Operation and Maintenance Manuals.

Checked By: _____

Name of Manufacturer's Rep.

Name of General Contractor

Address and Phone No. of Rep.

Authorized Signature/Title/Date

Signature/Title/Person Making Check

Name of Subcontractor

Date Checked

Authorized Signature/Title/Date

* Manufacturer's Representative Notations: Exception noted at time of check were:

Manufacturer's Representative to note any limitation on adequacy of related equipment that directly affects operation, performance or function of equipment checked. (No comment presented herein will indicate complete adequacy of related systems or equipment):

DEMONSTRATION TEST PROCEDURES (SAMPLE)

PROJECT DATA

NAME: Hardee County Landfill
LOCATION: Hardee County
DATE: _____
OWNER: Hardee County, Florida
OTHER: _____

CONTRACT DATA

NUMBER: _____

TEST AREA: PUMP STATION

SHEET: ____ **OF** ____

TEST DESCRIPTION:

DATE VERIFIED
VERIFIED _____ **BY** _____

1. Pump Capacity Verification

A. Shutoff Head - Record pressure of each pump under dead head conditions (pump against closed valve).

Pump 1	_____	psig (actual)	_____	psig (expected)	_____	_____
Pump 2	_____	psig (actual)	_____	psig (expected)	_____	_____

B. Pump-down test for each pump from wetwell with valve open.
Ten-minute runs at steady pressure after flow has been fully established.

Pump 1	_____	gpm (calculated)	_____	psig	_____	_____
	_____	gpm (from cert. curve @ above pressure)			_____	_____
Pump 2	_____	gpm (calculated)	_____	psig	_____	_____
	_____	gpm (from cert. curve @ above pressure)			_____	_____

C. Flowmeter verification

_____	gpm calculated	_____	_____
_____	gpm observed	_____	_____

D. Pump valve operation observed

E. Pump control functions observed:

1. Hand mode	_____	_____
2. Auto mode (level control)	_____	_____

CERTIFICATE OF COMPLETED DEMONSTRATION

OWNER: Hardee County, Florida Copies 5
ENGINEER: PBS&J, Inc. Copies 1
ARCHITECT: _____ Copies _____
Certificate of
CONTRACTOR: _____ Copies _____
Completed
FIELD: _____ Copies _____ Demonstration
OWNER: _____ Copies _____ Issue Date _____

PROJECT DATA

CONTRACT DATA

NAME: Hardee County Landfill
Leachate Storage Tank Facility

NUMBER: _____

LOCATION: Hardee County Landfill

OWNER: Hardee County, Florida

OTHER: _____

DATE: _____

DRAWING NO: _____

SPECIFICATION SECTION: _____

NOTE TO CONTRACTOR:

Submit six (6) copies of all information listed below for checking in order to receive approval at least one week before scheduled demonstration of the Work. After all information has been approved by the Engineer, give the Owner a Demonstration of Completed Systems as specified and have the Owner sign all copies of this form. After this has been done, a written request for a final inspection of the system shall be made.

MEMORANDUM:

This certificate states that the Owner has been given a Demonstration of Completed Systems on the work covered under this Specification Section. This conference consisted of the system operation, a tour on which all major items of equipment were explained and demonstrated, and the following items were given to the Owner:

- (a) Owner's copy of Operation and Maintenance Manual for equipment or systems specified under this section containing approved submittal sheets on all items, including the following:
 - (1) Maintenance information published by manufacturer on equipment items.
 - (2) Printed warranties by manufacturers on equipment items.
 - (3) Performance verification information as recorded by the Contractor.
 - (4) Check-out Memo's on equipment by manufacturer's representative.

(5) Written operating instructions on any specialized items.

(6) Explanation of guarantees and warranties on the system.

(b) Prints showing actual "As-Built" conditions.

(c) A demonstration of the System in Operation and of the maintenance procedures which will be required. Minor deficiencies to be corrected which were noted in the demonstration are attached, along with a copy of the actual test procedures performed.

(Name of Contractor)

By: _____

(Authorized Signature, Title & Date)

(Name of Subcontractor)

By: _____

(Authorized Signature, Title & Date)

Operations and Maintenance Manual, Instruction Prints, Demonstration & Instruction in Operation Received:

HARDEE COUNTY, FLORIDA

(Name of Owner)

By: _____

(Authorized Signature, Title & Date)

POST, BUCKLEY, SCHUH & JERNIGAN, INC.

By: _____

(Authorized Signature, Title & Date)

END OF SECTION

01650 - 9

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Comply with requirements stated in Conditions of the Contract and in specifications for administrative procedures in closing out the Work.
- B. Related Requirements Described Elsewhere:
 - 1. Conditions of the Contract. Fiscal provisions, legal submittals and additional administrative requirements.
 - 2. Section 01720: Project Record Documents

1.02 SUBSTANTIAL COMPLETION

- A. The work may not be considered substantially complete unless the punch list items that remain, as identified by the Engineer and Owner, can be completed within thirty (30) days. All painting, finishes, cleanup, final grading, grassing, and planting shall have been completed and ready for inspection before substantial completion is given. When the Contractor considers the Work as substantially complete, he will submit to the 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 will 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 the Contractor in writing, giving the reasons therefore.
 - 2. Contractor shall remedy the deficiencies in the Work and send a second written notice of substantial completion to Engineer.
 - 3. Engineer will reinspect the Work.

- D. When the Engineer finds that the Work is substantially complete, he will:
1. Prepare and deliver to the Owner a tentative Certificate of Substantial Completion with a tentative list of items to be completed or corrected before final payment.
 2. After consideration of any objections made by the Owner as provided in the Conditions of the Contract, and when Engineer considers Work substantially complete, the Engineer will execute and deliver to the Owner and Contractor a definite Certificate of Substantial Completion with a revised tentative list of items to be completed or corrected.

1.03 FINAL COMPLETION

- A. When the 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. Equipment and systems have been tested in the presence of Owner's representative and are operational.
 5. Work is completed and ready for final inspection.
- B. Engineer will make an inspection to verify the status of completion with reasonable promptness after receipt of such certification.
- C. Should the 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. Engineer will reinspect 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 reinspections due to failure of the Work to comply with the claims of status of completion made by the 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. Operating and Maintenance Data, Instructions to Owner's Personnel: To requirements of Section 01730.
- D. Spare Parts and Maintenance Materials: To requirements of Technical Sections of the Specifications.
- E. Evidence of Payment and Release of Liens: To requirements of General and Special Conditions.
- F. Certificate of Insurance for Products and Completed Operations.

1.06 FINAL STATEMENT

- A. Submit a final statement of accounting to the Engineer.
- B. Final 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 reinspection payments (i.e. laboratory costs, engineering costs)
 - h) Other adjustments
- 3. Total Contract Sum, as adjusted.
 - 4. Previous payments.
 - 5. Sum remaining due.
 - 6. Evidence of transfer of inventory for all spares, and expendables used to return and supply the full specified amounts and quantities 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.
 - 5. Engineer's Field Orders or written instructions.
 - 6. Reviewed Shop Drawings, Working Drawings and Samples.
 - 7. Field Test records.
 - 8. Construction photographs.
- B. Related Requirements Described Elsewhere:
 - 1. Section 01050: Field Engineering and Surveying
 - 2. Section 01340: Shop Drawings, Working Drawings and Samples
 - 3. ~~Section 01900: Suggested Construction Sequencing~~

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. Payment may be withheld if record documents are not satisfactorily maintained.

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 (rubber stamp with 1-1/2" letters, preferable).
- B. Record information concurrently with construction progress.
 - 1. Do not conceal any work until required information is recorded.
- C. Drawings: Legibly mark, to scale, to record actual construction:
 - 1. Depths of various elements of foundation in relation to finish first floor datum.
 - 2. All underground piping with elevations and dimensions. Change to piping location. 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 six (6) 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 01730

OPERATING AND MAINTENANCE DATA

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Scope of Work:

1. Compile product data and related information appropriate for Owner's maintenance and operation of products furnished under Contract.
2. Prepare operating and maintenance data as specified in this Section and as referenced in other pertinent sections of Specifications.
3. Instruct Owner's personnel in maintenance of products and in operation of equipment and systems.

B. Related Requirements Described Elsewhere:

1. Section 01340: Shop Drawings, Working Drawings, and Samples
2. Section 01700: Contract Closeout
3. Section 01720: Project Record Documents
4. Section 01740: Warranties and Bonds

1.02 QUALITY ASSURANCE

A. Preparation of data shall be done by personnel:

1. Trained and experienced in maintenance and operation of described products.
2. Familiar with requirements of this Section.
3. Skilled as a technical writer to the extent required to communicate essential data.
4. Skilled as draftsman competent to prepare required drawings.

1.03 FORM OF SUBMITTALS

A. Prepare data in form of an instructional manual for use by Owner's personnel.

B. Format:

1. Size: 8-1/2 inches x 11 inches.
2. Paper: 20 pound minimum, white, for typed pages.
3. Text: Manufacturer's printed data, or neatly typewritten.
4. Drawings:
 - a) Provide reinforced punched binder tab, bind in with text.
 - b) Reduce larger drawings and fold to size of text pages but not larger than 14 inches x 17 inches.
5. Provide fly-leaf for each separate products, or each piece of operating equipment.
 - a) Provide typed description of products and major component parts of equipment.
 - b) Provide indexed tabs.
6. Cover: Identify each volume with typed or printed title "OPERATING AND MAINTENANCE INSTRUCTIONS". List:
 - a) Title of Project.
 - b) Identity of separate structure as applicable.
 - c) Identity of general subject matter covered in the manual.

C. Binders:

1. Commercial quality three-post binders with durable and cleanable plastic covers.
2. Maximum post width: 2 inches.
3. When multiple binders are used, correlate the data into related consistent groupings.

1.04 CONTENT OF MANUAL

A. Neatly typewritten table of contents for each volume, arranged in systematic order.

1. Contractor, name of responsible principal, address, and telephone number.
2. A list of each product required to be included, indexed to content of the volume.
3. List with each product:
 - a) Subcontractor or installer name, address, telephone number, and area of responsibility.
 - b) Manufacturer and supplier name, address, telephone number, and area of responsibility.
 - c) Local source of supply for parts and replacement.
4. Identify each product by product name and other identifying symbols as set forth in Contract Documents.

B. Product Data:

1. Include only those sheets which are pertinent to the specific product.
2. Annotate each sheet to:
 - a) Clearly identify specific product or part installed.
 - b) Clearly identify data applicable to installation.
 - c) Delete references to inapplicable information.
3. Operation and maintenance information as herein specified.
4. Record shop drawings as submitted and approved with all corrections made for each product.

C. Drawings:

1. Supplement product data with drawings as necessary to clearly illustrate:
 - a) Relations of component parts of equipment and systems.
 - b) Control and flow diagrams.

2. Coordinate drawings with information in Project Record Documents to assure correct illustration of completed installation.
 3. Do not use Project Record Documents as maintenance drawings.
- D. Written text, as required to supplement product data for the particular installation:
1. Organize in consistent format under separate headings for different procedures.
 2. Provide logical sequence of instructions of each procedure.
- E. Copy of each warranty, bond and service contract issued.
1. Provide information sheet for Owner's personnel, give:
 - a) Proper procedures in event of failure.
 - b) Instances which might affect validity of warranties or bonds.

1.05 MANUAL FOR MATERIALS AND FINISHES

- A. Submit six copies of complete manual in final form.
- B. Content - Architectural Products, Applied Materials, and Finishes:
1. Manufacturer's data, giving full information on products.
 - a) Catalog number, size, composition.
 - b) Color and texture designations.
 - c) Information required for reordering special manufactured products.
 2. Instructions for care and maintenance.
 - a) Manufacturer's recommendation for types of cleaning agents and methods.
 - b) Cautions against cleaning agents and methods which are detrimental to product.
 - c) Recommend schedule for cleaning and maintenance.

C. Content - Moisture Protection and Weather-exposed Products:

1. Manufacturer's data, giving full information on products.
 - a) Applicable standards.
 - b) Chemical composition.
 - c) Details of installation.
2. Instructions for inspection, maintenance and repair.

D. Additional Maintenance Data: See the respective specification(s).

1.06 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit five copies of complete manual in final form.

B. Content, for each unit of equipment and system, as appropriate:

1. Description of unit and component parts.
 - a) Function, normal operating characteristics, and limiting conditions.
 - b) Performance curves, engineering data and tests.
 - c) Complete nomenclature and commercial number of replaceable parts.
 - d) Summary of information listed on equipment and motor data plates.
2. Operating procedures:
 - a) Start-up, break-in, routine and normal operating instructions.
 - b) Regulation, control, stopping, shut-down and emergency instructions.
 - c) Summer and winter operating instructions.
 - d) Special operating instructions.

3. Maintenance procedures:
 - a) Routine operations.
 - b) Guide to "trouble-shooting".
 - c) Disassembly, repair and reassembly.
 - d) Alignment, adjusting and checking.
 4. Servicing and lubrication required.
 5. Manufacturer's printed operating and maintenance instructions.
 6. Description of sequence of operation by control manufacturer.
 7. Original manufacturer's parts list, illustrations, assembly drawings and diagrams required for maintenance.
 - a) Predicted life of parts subject to wear.
 - b) Items recommended to be stocked as spare parts.
 8. As-installed control diagrams by controls manufacturer.
 9. Each Contractor's coordination drawings.
 10. Charts of valve tag numbers, with location and function of each valve.
 11. List of original manufacturer's spare parts, manufacturer's current prices and recommended quantities to be maintained in storage.
 12. Other data as required under pertinent sections of specifications.
 13. Approved record shop drawings with all corrections made, and a copy of the warranty statement, check-out memo, and demonstration test procedures and certification.
- C. Content, for each electric and electronic system, as appropriate:
1. Description of system and component parts.
 - a) Function, normal operating characteristics, and limiting conditions.

- b) Performance curves, engineering data and tests.
 - c) Complete nomenclature and commercial number of replaceable parts.
 - 2. Circuit directories of panelboards.
 - a) Electrical service
 - b) Controls
 - c) Communications
 - 3. As installed color coded wiring diagrams.
 - 4. Operating procedures:
 - a) Routine and normal operating instructions.
 - b) Sequences required.
 - c) Special operating instructions.
 - 5. Maintenance procedures:
 - a) Routine operations.
 - b) Guide to "trouble-shooting".
 - c) Disassembly, repair and reassembly.
 - d) Adjustment and checking.
 - 6. Manufacturer's printed operating and maintenance instructions.
 - 7. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.
 - 8. Other data as required under pertinent sections of specifications.
- D. Prepare and include additional data when the need for such data becomes apparent during instruction of Owner's personnel.
- E. Additional requirements for operating and maintenance data: Respective sections of Specifications.

1.07 SUBMITTAL SCHEDULE

- A. Submit two copies of preliminary draft of proposed formats and outlines of contents of Operation and Maintenance Manuals within 45 days after Notice to Proceed. Sets of example O&M manuals are available for examination upon request. Engineer will review the preliminary draft and return one copy with comments.
- B. Submit two copies of completed data in final form no later than 30 days following Engineer's review of the last shop drawing and/or other submittal specified in Section 01340, but no later than delivery of equipment. One copy will be returned with comments to be incorporated into the final copies and the other copy will be retained on-site for use in any early training.
- C. Submit six (6) copies of approved manual in final form directly to the offices of the Owner within 30 calendar days of product shipment to the project site and preferably within 30 days after the reviewed copy is received.
- D. Append any addendums to each of the operation and maintenance manuals as applicable and certificates as specified within 30 days after final inspection and demonstration test.

1.08 INSTRUCTION OF OWNER'S PERSONNEL

- A. Prior to demonstration test, fully instruct Owner's designated operating and maintenance personnel in operation, adjustment and maintenance of products, equipment and systems. Review contents of manual with personnel in full detail to explain all aspects of operations and maintenance.
- B. Instructors shall be fully qualified personnel as outlined within the individual equipment specifications. If no specific training specifications are listed with the equipment, the Contractor shall provide the instruction with qualified Contractor personnel.
- C. The instructors shall provide for and prepare lesson scopes and handouts for up to five individuals designated by the Owner that outline the items to be covered. Separate sessions for operation and maintenance instruction shall be provided consecutively. Handouts shall be submitted to the Owner within one week prior to the training sessions.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

01730 - 8

SECTION 01740

WARRANTIES AND BONDS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

A. Scope of Work:

1. Compile specified warranties and bonds as specified in the Conditions of the Contract and 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. Section 01700: Contract Closeout

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 or 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 and/or material, submit a warranty from the equipment manufacturer. The 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 the Owner.
- B. The Contractor shall be responsible for obtaining warranty certificates for all major equipment/material which has at least a 1 hp motor or which lists for more than \$1,000.

The Engineer reserves the right to request warranties not classified as major. The Contractor shall still warrant equipment/material not considered to be "major" in the Contractor's one-year warranty period even though certificates of warranty may not be required.

- C. In the event that the equipment/material manufacturer or supplier is unwilling to provide a one-year warranty commencing at the time of Owner acceptance, the Contractor shall obtain from the manufacturer a two-year warranty commencing at the time of 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.
- D. Owner shall incur no labor, material, or equipment cost during the guarantee period.
- E. Guarantee shall cover all necessary labor, material, 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 material, equipment, and components furnished by the manufacturer.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

DIVISION 2

SITE WORK

SECTION 02100

SITE PREPARATION

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope of Work:

1. This Section covers clearing, grubbing, and stripping along the construction sites, complete as specified herein.
2. The Contractor shall clear and grub all of the area within the limits of actual construction as required, which includes, but is not limited to, roadways, trenchwork, structures, and open areas. The width of the area to be cleared shall be approved by the Engineer prior to the beginning of any clearing.
3. The Contractor's attention is directed to any Soil Erosion and Sediment Control Ordinances in force. The Contractor shall comply with all applicable sections of these ordinances.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 CLEARING

- A. The surface of the ground, for the area to be cleared and grubbed shall be completely cleared of all timber, brush, stumps, roots, grass, weeds, rubbish, and all other objectionable obstructions resting on, or protruding through, the surface of the ground. However, those trees which are designated by the Engineer shall be preserved as hereinafter specified. Clearing operations shall be conducted so as to prevent damage to existing structures and installations, and to those under construction, so as to provide for the safety of employees and others.

3.02 GRUBBING

- A. Grubbing shall consist of the complete removal of all stumps, roots larger than 1 1/2-inches in diameter, matted roots, brush, timber, logs, and any other organic or metallic

debris not suitable for foundation purposes, resting on, under or protruding through the surface of the ground to a depth of 2 feet below the excavated surface under roadways and structures, and 1 foot below all other areas requiring clearing and grubbing. All depressions excavated below the original ground surface for or by the removal of such objects, shall be refilled with suitable materials and compacted to a density conforming to the surrounding ground surface.

3.03 STRIPPING

- A. For open areas for sodding or seeding, grass and roots shall be stripped to a depth of 4 inches.
- B. Stripped material suitable for topsoil shall be stockpiled and shall be protected until it is replaced. Any topsoil remaining after all work is in place, shall be disposed of by the Contractor unless directed otherwise by the Engineer.

3.04 DISPOSAL OF CLEARED AND GRUBBED MATERIAL

- A. The Contractor shall stockpile all material and debris from the clearing and grubbing operation by hauling such material and debris to an onsite location designated by the Owner. No burning shall be allowed on-site.

3.05 PRESERVATION OF TREES

- A. Trees outside the limits of construction shall be carefully protected from damage. The Contractor shall erect such barricades, guards, and enclosures as may be considered necessary for him for the protection of the trees during all construction operations.
- B. Removal of trees within the limits of construction shall be in accordance with applicable local ordinances. The Contractor shall apply for and pay for all costs associated with the permitting of and removal of trees from the proposed developed area.

END OF SECTION



An employee-owned company

October 28, 1998

Ms. Susan J. Pelz, P.E.
Solid Waste Section
Southwest District
3804 Coconut Palm Drive
Tampa, FL 33619

Re: Hardee County Class I Landfill
Pending Permit No. 38414-001-SC
Revised Dewatering Specification 02140

Dear Ms. Pelz:

Enclosed for your approval is the revised dewatering specification for the above-referenced project. This specification has been revised to set the prime method of disposal of the dewatering fluid to be trucking of the water to a WWTP for disposal, with on-site storage in a temporary pond constructed for this purpose as a back up option.

Please call me if you have any questions or comments regarding the enclosed specification.

Very truly yours,

A handwritten signature in cursive script that reads 'David E. Deans'.

David E. Deans, P.E.
Sr. Vice President

G:\ENV\COMMON\WASTEMAN\HARDEE\PERMIT\PELZ1028.WPD

Enclosure

c: J. R. Prestridge, Hardee County

RECEIVED

OCT 30 1998

DEP

SECTION 02140

DEWATERING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: The work to be performed under this section shall include furnishing all equipment and labor necessary to remove storm or subsurface waters from excavation and lined areas in accordance with the requirements set forth herein and as shown on the Drawings.

1.02 QUALITY ASSURANCE

- A. The dewatering of any excavation or lined areas and the disposal of the water shall be in strict accordance with the latest revision of all local, state and federal government rules and regulations.

1.03 SUBMITTALS

- A. The Contractor shall submit a detailed dewatering plan to the Engineer for review. Review shall be for general information only. The Contractor shall remain responsible for the adequacy and safety of the methods. The dewatering plan shall describe the procedures and schedule to be followed and include the types and capacities of equipment proposed to be used. The testing parameters and frequencies, if required shall be included. The Contractor's dewatering plan will be reviewed by the Florida Department of Environmental Protection (FDEP). The dewatering plan shall be approved by FDEP prior to construction.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 DEWATERING

- A. The Contractor shall provide adequate equipment for the removal of storm or subsurface waters which may accumulate in the excavation or on the lined areas.

- B. If subsurface water or ponding is encountered, the Contractor shall utilize suitable equipment to adequately dewater the excavation or lined areas so that it will be dry for continuation of work. A well point system or other Engineer-approved dewatering method shall be utilized, if necessary, to maintain the construction area in a dry condition for preparation of the lined areas for construction or trench bottoms for pipe placement.
- C. Dewatering by trench pumping will not be permitted if migration of fine grained natural material from bottom, side walls, or bedding material will occur.
- D. In the event that satisfactory dewatering cannot be accomplished due to subsurface conditions or where dewatering could damage existing structures, the Contractor shall obtain the Engineer's approval of wet trench construction before resuming work.

3.02 DISPOSAL

- A. The Owner has two alternatives options for the disposal of dewatering activities. The Contractor shall be informed of the selected alternative when the Notice to Proceed is given: preferred option is contained in the base bid. Should site conditions require additional storage capacity, Option 1 may be exercised at the Owner's choice.

1. ~~Alternative 1~~ Base Bid

- a. Water shall be pumped to the existing dewatering ditch. Contractor shall monitor and record the flow into the dewatering ditch. Contractor shall be responsible for the transportation and disposal of all water pumped into the dewatering ditch by the Contractor at the Wachula Waste Water Treatment plant or other permitted facility.

2. ~~Alternative 2~~ Option 1

- a. Contractor shall construct a temporary reinfiltration pond in the location shown on Sheet C-1 of the Construction Drawings. Fill material for the pond berms shall be obtained from the Owner's on-site borrow source. Excavation and transport of the fill material shall be coordinated with the Owner. Pond berms shall be a minimum of four (4) feet in height and no steeper than 2 horizontal to 1 vertical (2:1). Excavation and compaction shall be in accordance with Section 02220.

Ab. Water shall be pumped into this temporary pond, to the pond temporary storage area from the lined areas, trench or other excavation. shall be disposed of in storm sewers, canals or suitable disposal pits having adequate capacity: tested by the Contractor in the field, in the presence of the Engineer's on-site representative, to determine if the water can be discharged to the adjacent borrow area. The Contractor shall give the Engineer's representative two-hour notice when testing will be conducted. The flow into the pond shall be monitored and recorded.

c. An initial testing of the subsurface water shall be conducted in the vicinity of the excavation prior to construction. The following is a partial list for the proposed initial testing, the final list of parameters will be determined by FDEP during approval of the Contractor's dewatering plan.

Parameter	Maximum Containment Level (mg/l)
Antimony	0.006
Arsenic	0.05
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide	0.2
Fluoride	4.0
Lead	0.015
Mercury	0.002
Nickel	0.1
Nitrate	10 (as N)
Nitrite	1 (as N)
Selenium	0.05
Sodium	160
Thallium	0.002

Testing parameters are listed below:

Parameter	Highest Acceptable Level
Chloride	250 mg/L
Specific Conductance	500 umhos/cm

- d. ~~After initial testing those parameters that were above detection limits will continued to be sampled along with Nitrate, Nitrite and Sodium.~~

~~The preliminary testing frequency is twice per day (at the beginning and end of the work day). The testing frequency may be decreased depending on the results of the testing and the requirements of FDEP. water (approximately one volume of the County leachate hauling vehicle) temporary storage area. The costs for testing shall be at the Contractor's expense.~~

~~If testing reveals results within acceptable levels of listed parameters, the Contractor shall discharge the water from the temporary storage area to the County's adjacent borrow area by method submitted to and accepted by the Engineer. Energy dissipation, and turbidity and sediment control of the waters discharged into the borrow area shall be included in the discharge method submitted.~~

~~If testing reveals results are not within listed parameters, *At the County's option*, the Contractor shall contact the County immediately and arrange for removal and hauling of the water to the County's leachate treatment facility for treatment. Additional dewatering shall be conducted in accordance with Alternative 1: *dispose of the water in this pond in the same manner as contained in 3.02A.1.a.*~~

~~Upon completion of the dewatering operation, the 60 mil HDPE geomembrane shall be disposed in the active disposal area at no cost to the Contractor. The area shall be graded and restored to its pre-construction grades, including sod installation.~~

- B. ~~The Contractor is responsible for acquiring at no cost to the County or Engineer, all permits required to discharge the water and shall protect waterways from turbidity or silting during the operation.~~
- C. ~~In areas where adequate water disposal sites are not available, partially back-filled trenches may be used only when the Contractor's plan for trench disposal is approved in writing by the Engineer. The Contractor's plan shall include temporary culverts, barricades and other protective measures to prevent damage to property or injury to any person or persons.~~
- B.D. No flooding of roadways, driveways or private property will be permitted. Engines driving dewatering pumps shall be equipped with residential type mufflers. Where practical and feasible, electrical "drops" should be used in lieu of portable generators.
- C.E. Stormwater from any construction areas shall not be allowed to enter the adjacent active or inactive solid waste disposal areas.

END OF SECTION

D.E.P.

SECTION 02220

APR 27 1998

SOUTHWEST DISTRICT
TAMPA

EXCAVATION, BACKFILLING, AND COMPACTION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Scope of Work: The work of this section consists of furnishing all necessary labor, equipment, material, and transportation necessary for all required earthwork which incorporates excavation, backfilling, and compaction.
- B. Definitions:
 - 1. Maximum Density: Maximum weight in pounds per cubic foot of a specific material.
 - 2. Optimum Moisture Content: The optimum moisture content shall be determined by ASTM D 1557 specified to determine the maximum dry density for relative compaction. Field moisture content shall be determined on the basis of the fraction passing the 3/4-inch sieve.
 - 3. Rock Excavation: Excavation of any hard natural substance which requires the use of explosives and/or special impact tools such as jack hammers, sledges, chisels or similar devices specifically designed for use in cutting or breaking rock, but exclusive of trench excavating machinery.
 - 4. Suitable: Suitable materials for fills shall be a non-cohesive, non-plastic granular local sand which shall be free from vegetation, organic material, marl, silt or muck. The Contractor shall furnish all additional fill material required.
 - 5. Unsuitable: Unsuitable materials are highly organic soil (peat or muck) classified as A-8 in accordance with AASHTO Designation M 145.
- C. Plan For Earthwork:
 - 1. The Contractor shall be responsible for having determined, prior to the submission of the bid, the conformation of the ground, the character and quality of the substrata, the types and quantities of materials to be encountered, the nature of the groundwater conditions, the prosecution of the Work, the

general and local conditions and all other matters which can in any way affect the Work under this Contract according to the General Conditions.

2. Prior to commencing the excavation, the Contractor shall submit a plan of proposed operations to the Engineer for review. The Contractor shall reflect the equipment and methods to be employed in the excavation. Prices established in the Bid Proposal will reflect all costs pertaining to the Work. No claims for extras based on substrata or groundwater table conditions will be allowed.

- D. Trench Safety Act: The Contractor shall comply with all of the requirements of the Florida Trench Safety Act Chapter 553.60, Fla. Administration Code. The Contractor shall acknowledge that included in various items of the Bid Proposal and in the total Bid Price are costs for complying with the provisions of the Act. Additionally, the Contractor is required to break out the costs for complying with the Florida Trench Safety Act. **FAILURE TO COMPLY WITH THE REQUEST IN THIS SECTION MAY RESULT IN THE BID BEING DECLARED NON-RESPONSIVE.** Failure to comply with the provisions of the Act shall result in a per diem penalty of \$1,000 per day that the Work is out of compliance.

1.02 APPLICABLE PUBLICATIONS

- A. All publications and standard specifications referred to herein are the latest or current issue of that publication or specification as of the specification date.

1.03 QUALITY ASSURANCE

- A. An independent Testing Laboratory employed by the Contractor, and approved by the Owner/Engineer, will make such tests as ~~are deemed advisable~~ required by this Section. The Contractor shall schedule work so as to permit reasonable time for testing before placing succeeding lifts and shall keep the laboratory and Engineer informed of progress.

1.04 FEDERAL AND STATE REGULATORY REQUIREMENTS

- A. All trench excavations which exceed 4 feet in depth shall comply with the applicable trench safety standards as stated in the OSHA excavation safety standards 29 CFR S.1926.650 Subpart P as regulated and administered by the Florida Department of Labor and Employment Security as the "Florida Trench Safety Act."

1.05 JOB CONDITIONS

- A. If, in the opinion of the Engineer, conditions encountered during construction warrant a change in the footing elevation or in the depth of removal of unsuitable material, an adjustment will be made in the Contract Price, as provided in the General Conditions.

1.06 PROTECTION

A. Pre-Construction Survey:

1. Prior to commencing excavation, backfill or dewatering, the Engineer and Contractor shall jointly conduct a survey of those existing structures which, in the opinion of the Engineer, may be subject to settlement or distress resulting from excavation or dewatering operations.
2. The Engineer will monitor the structures surveyed to ascertain evidence of settlement or distress. If settlement or distress becomes evident the Contractor shall be required to repair the structures to the previous condition to the satisfaction of the Engineer. Costs shall be paid by the Contractor.

1.07 SUBMITTALS

- A. Submit to the Engineer for review the proposed methods of construction, including dewatering, excavation, bedding, filling, compaction and backfilling for the various portions of the work. Review shall be for method only. The Contractor shall remain responsible for the adequacy and safety of the methods.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. All fill material from on and off-site sources shall be subject to the acceptance of the Engineer.
2. All fill material shall be unfrozen and free of organic material, trash, or other objectionable material. Excess or unsuitable material as designated by the

Engineer shall be removed from the job site by the Contractor, or be provided to the Owner, at the Owner's option.

3. ~~Not all of the following specifications may apply to this project. See the Construction Drawings for more detail.~~

B. Common Fill:

1. Common fill shall be sand not containing stones, rock, concrete or other rubble larger than 2 inches in diameter. It shall have physical properties which allow it to be easily spread and compacted.
2. The Contractor shall utilize as much excavated soil material as possible for reuse in accordance with the Contract Drawings and specifications or as directed by the Engineer. No soil containing or contaminated by solid waste or other similar material will be allowed in Common Fill.
3. The Engineer shall advise the Contractor on the type of material allowed in certain sections of the earthwork operations.

C. Select Common Fill:

1. Select common fill shall consist of common fill material. This material used as protective cover soil for the liner. It shall not contain any sharp or granular rock exceeding 1/4-inch in diameter, and be free from clay, loam, or organic matter. It shall have physical properties which allow it to be easily spread and compacted.
2. The Engineer shall advise the Contractor on the type of material allowed in certain sections of the earthwork operations.

D. Structural Fill: Structural fill shall be well graded sand to gravelly sand having the following gradation:

<u>U.S. Sieve Size</u>	<u>Percent Passing By Weight</u>
1 - inch	100
No. 4	75-100
No. 40	15-80
No. 100	0-30
No. 200	0-10

- E. Class I Soils¹: Manufactured angular, granular material, 1/4 to 1/2 inch (6 to 12 mm) in size, including materials having significance such as crushed stone or rock, broken coral, crushed slag, cinders, or crushed shells. Sieve analysis for crushed stone is given below separately.

1. Crushed Stone: Crushed stone shall consist of clean mineral aggregate free from clay, loam or organic matter, conforming with ASTM C33 stone size No. 89 and with particle size limits as follows:

<u>U.S. Sieve Size</u>	<u>Percent Passing By Weight</u>
1/2	100
3/8	90-100
No. 4	20-55
No. 8	5-30
No. 16	0-10
No. 50	0-5

- F. Class II Soils²:

1. GW: Well-graded gravels and gravel-sand mixtures, little or no fines. Fifty (50) percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
2. GP: Poorly graded gravels and gravel-sand mixtures, little or no fines. Fifty (50) percent or more retained on No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
3. SW: Well-graded sands and gravelly sands, little or no fines. More than fifty (50) percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.
4. SP: Poorly graded sands and gravelly sands, little or no fines. More than fifty (50) percent passes No. 4 sieve. More than 95 percent retained on No. 200 sieve. Clean.

- G. Filter Aggregate: Filter aggregate shall consist of clean mineral aggregate with particle size limits as follows:

¹ Soils defined as Class I soils are not defined in ASTM D2487.

²In accordance with ASTM D2487, less than 4 percent pass No. 200 sieve.

U.S. Sieve Size

Percent Passing By Weight

3"	100
3/8"	80-100
No. 4	60-90
No. 10	30-70
No. 20	0-40
No. 40	0-15

The permeability of the material shall be a minimum of 1×10^{-3} cm/sec.

- H. Drainage Sand: Drainage sand shall be well graded, clean quartz base sand, free from clay, loam or organic matter. The sand shall not contain any sharp or angular rock greater than 3/8-inch in diameter with maximum percentage of carbonates of calcium and magnesium of 3 percent with particle size limits as follows:

U.S. Sieve Size

Percent Passing By Weight

No. 3	100
No. 4	95
No. 200	Maximum 3

The saturated hydraulic conductivity of the in-place sand shall be a minimum 1×10^{-3} cm/sec. This material shall come from off-site borrow sources and adequate quantities shall be stockpiled prior to any drainage sand placement activities.

The Contractor shall identify borrow sources and submit site specific soils analyses which confirm compliance of the borrow source with the material specification requirements before delivery of material to the site. Samples will be taken by the Contractor's testing laboratory during delivery of the material to assure continuous compliance with the specifications. Frequency of testing shall be at Engineer's discretion.

- I. Other Material: All other material, not specifically described, but required for proper completion of the work shall be selected by the Contractor and reviewed by the Engineer for conformance with the Contract Documents prior to installation.

PART 3 - EXECUTION

3.01 PROTECTION

A. Sheeting and Bracing:

1. Furnish, put in place, and maintain sheeting and bracing as required to support the sides of excavations, to prevent movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures, and to protect workers from hazardous conditions or other damage. Such support shall consist of braced steel sheet piling, braced wood lagging and soldier beams or other accepted methods. If the Owner is of the opinion that sufficient or proper supports have not been provided, Owner may order additional supports be installed at the expense of the Contractor, and compliance with such order shall not relieve or release the Contractor from responsibility for the sufficiency of such supports. Care shall be taken to prevent voids beside the sheeting, but if voids are formed, they shall be immediately filled and compacted. Where soil cannot be properly compacted to fill a void, lean concrete shall be used as backfill at no additional expense to the Owner or Engineer.
2. The Contractor shall construct sheeting outside the neat lines of the foundation unless deemed desired otherwise for his method of operation. Sheeting shall be plumb and securely braced and tied in position. Sheeting and bracing shall withstand all pressure to which the structure or trench will be subjected. Any deformation shall be corrected by the Contractor at no additional expense to Owner or Engineer so as to provide the necessary clearances and dimensions.
3. Where sheeting and bracing is required to support the sides of excavations for structures, the Contractor shall engage a professional geotechnical engineer, registered in the State of Florida, to design the sheeting and bracing. The sheeting and bracing installed shall conform with the design, and certification of this shall be provided by the professional geotechnical engineer.
4. The installation of sheeting, particularly by driving or vibrating, may cause distress to existing structures. The Contractor shall evaluate the potential for such distress and, if necessary, take all precautions to prevent distress of existing structures because of sheeting installation.
5. The Contractor shall leave in place to be embedded in the backfill, all sheeting and bracing not shown on the Drawings, but which the Owner directs Contractor in writing to leave in place at any time during the progress of the Work for the purpose of preventing injury to structures, utilities, or property, whether public or private. The Owner may direct that timber used for sheeting and bracing be cut off at any specified elevation.

6. All sheeting and bracing not left in place shall be carefully removed in such manner as not to endanger the construction, or other structures, utilities, or property. All voids left or caused by withdrawal of sheeting shall be immediately refilled with sand by ramming with tools especially adapted for that purpose, or otherwise directed by the Owner.
7. The right of the Owner to order sheeting and bracing left in place shall not be construed as creating any obligation on its part to issue such orders, and Owner's failure to exercise the right to do so shall not relieve the Contractor from liability for damages to persons or property occurring from or upon the Work occasioned by negligence or otherwise, growing out of a failure on the part of the Contractor to leave in place sufficient sheeting and bracing to prevent any caving or moving of the ground.
8. No wood sheeting is to be withdrawn if driven below mid-diameter of any pipe, and under no circumstances shall any wood sheeting be cut off at a level lower than 1 foot above the top of any pipe.

B. Pumping and Drainage:

1. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove all water entering excavations, and shall keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition until the fills, structures or pipes to be built thereon have been completed to such extent that they will not be floated or otherwise damaged by allowing water levels to return to natural levels. The Contractor shall engage a Professional Geotechnical Engineer registered in the State of Florida, to design the dewatering systems for all structures. The Contractor shall submit to the Engineer for review a plan for dewatering systems prior to commencing Work. The Professional Geotechnical Engineer shall be required to monitor the performance of the dewatering systems during the progress of the Work and require such modifications as may be required to assure that the systems are performing satisfactorily.
2. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed bearing capacity of the subgrade soils at the bottom of the excavation and to preserve the integrity of adjacent structures. Well or sump installations shall be constructed with proper sand filters to prevent intermixing of finer grained soil from the surrounding ground.

3. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and pumped from the excavation to maintain a bottom free from standing water.
4. The Contractor shall take all additional precautions to prevent buoyant uplift of any structure during construction.
5. The conveying of dewatered liquids in open ditches or trenches will not be allowed. Permission to use any storm sewers, or drains, for water disposal purposes shall be obtained from the authority having jurisdiction. Any requirements and costs for such use shall be the responsibility of the Contractor. The Contractor shall not cause flooding by overloading or blocking up the flow in the drainage facilities, and he shall leave the facilities unrestricted and as clean as originally found. Any damage to facilities shall be repaired or restored as directed by the Owner or the authority having jurisdiction, at no cost to the Owner or Engineer.
6. Flotation shall be prevented by the Contractor by maintaining a positive and continuous operation of the dewatering system. The Contractor shall be fully responsible and liable for all damages which may result from failure of this system.
7. Removal of dewatering equipment shall be accomplished after the system is no longer required; the material and equipment constituting the system, shall be removed by the Contractor.
8. The Contractor shall take all necessary precautions to preclude the accidental discharge of fuel, oil, etc. in order to prevent adverse effects on soil or groundwater quality.

3.02 EXCAVATION

A. Excavating for Structures and Utilities:

1. Excavation work shall be performed in a safe and proper manner with appropriate precautions being taken against all hazards. Excavations shall provide adequate working space and clearances for the work to be performed therein and for installation and removal of concrete forms. In no case shall excavation faces be undercut for extended footings.

2. Excavation shall be made to such dimensions as will give suitable room for bracing and supporting, for pumping and draining, for installing the pipelines, and for all other work required.
 - a) Excavation for precast or prefabricated structures shall be carried to an elevation 2 feet lower than the proposed outside bottom of the structure to provide space for the structural backfill material.
 - b) Excavation for structures constructed or cast-in-place in dewatered excavations shall be carried down to the bottom of the structure where dewatering methods are such that a dry excavation bottom is exposed and the naturally occurring material at this elevation leveled and left ready to receive construction. Material disturbed below the founding elevation in dewatered excavations shall be replaced with Class B concrete.
3. Immediately document the location, elevation, size, material type and function of all new subsurface installations, and utilities encountered during the course of construction.
4. Excavation equipment operators and other concerned parties shall be familiar with subsurface obstructions as shown on the Drawings and should anticipate the encounter of unknown obstructions during the course of the Work.
5. Encounters with subsurface obstructions shall be hand excavated.
6. Excavation and dewatering shall be accomplished by methods which preserve the undisturbed state of subgrade soils. Subgrade soils which become soft, loose, "quick" or otherwise unsatisfactory for support of structures as a result of inadequate dewatering or other construction methods, shall be removed and replaced by crushed stone as required by the Engineer at the Contractor's expense.
7. The bottom of excavations shall be rendered firm and dry before placing any structure or pipe. Excavated material not suitable for backfill shall be removed from the site and disposed of by the Contractor.
8. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered.
9. All structure and pipe locations and elevations as required herein must be permanently documented by the Contractor, on the Record Drawings prior to the Engineer's recommendation of the Application for Payment for that work.

10. Excavated material shall be stockpiled in such a manner as to prevent nuisance conditions. Surface drainage shall not be hindered. No excavated material or other construction material shall be placed within 30 feet of the edge of pavement of any public road.

3.03 DRAINAGE

- A. The Contractor shall at all times during construction provide and maintain proper equipment and facilities to remove promptly and dispose of properly all water entering excavations, and keep such excavations dry so as to obtain a satisfactory undisturbed subgrade foundation condition. The dewatering method used shall prevent disturbance of earth below grade.
- B. All water pumped or drained from the excavated area shall be disposed of in a suitable manner without undue interference with other work, without damage to surrounding property, and in accordance with pertinent rules and regulations.
- C. No construction, including pipe laying, shall be allowed in water. Groundwater shall be maintained at least 12 inches below excavation. No water shall be allowed to come into contact with masonry or concrete within 24 hours after being placed. The Contractor shall constantly guard against damage due to water and take full responsibility for all damage resulting from failure to do so.
- D. The Contractor will be required at no additional expense to Owner or Engineer to excavate below grade and refill with accepted fill material if the Owner determines that adequate drainage has not been provided.

3.04 UNDERCUT

- A. If the bottom of any excavation is below that shown on the Drawings or specified because of Contractor error, convenience, or unsuitable subgrade due the Contractor's excavation methods, Contractor shall refill to normal grade with fill at Contractor's expense. Fill material and compaction method shall be as accepted by the Engineer.

3.05 STABILIZATION

- A. Subgrades for concrete structures and trench bottoms shall be firm, dense, and thoroughly compacted and consolidated; shall be free from mud and muck; and shall be sufficiently stable to remain firm and intact.

- B. Subgrades for concrete structures or trench bottoms which are otherwise solid, but which becomes mucky on top due to construction operations, shall be reinforced with one or more layers of crushed rock or gravel. Not more than 1/2 inch depth of mud or muck shall be allowed to remain on stabilized trench bottoms when the pipe bedding material is placed thereon. The finished elevation of stabilized subgrades for concrete structures shall not be above subgrade elevations shown on the Drawings.

- C. All stabilization work shall be performed by and at the expense of the Contractor.

3.06 FILL AND COMPACTION

- A. Materials:

1. To the maximum extent available, excess earth obtained from structure and trench excavation shall be used for the construction of fills and embankments.
2. Materials used as backfill shall be free from rocks or stones larger than 2 inches in their greatest dimension; brush, stumps, logs, roots, debris, and organic or other deleterious materials; and must be acceptable to the Engineer.
3. Backfilling and construction of fills and embankments during freezing weather shall not be done except by permission of the Engineer. No backfill, fill, or embankment materials shall be installed on frozen surfaces, nor shall frozen materials be in any backfill, fill or embankment.

- B. Placement and Compaction:

1. Backfill materials shall be placed in approximately horizontal layers not to exceed 12 inches in loose thickness. Material deposited in piles or windrows by excavating and hauling equipment shall be spread and leveled before compaction.
2. Each layer of material being compacted shall have the best practicable uniform moisture content to ensure satisfactory compaction. The Contractor will be required to add water and harrow, disc, blade, or otherwise work the material in each layer to ensure uniform moisture content and adequate compaction. Each layer shall be thoroughly compacted by rolling or other method acceptable to the Engineer as indicated in Table 02220-A.
3. Whenever a trench passes through a backfill or embankment, material shall be placed and compacted to an elevation 12 inches above the top of the pipe before the trench is compacted.

- C. Compact and backfill excavations and construct embankments for structures according to the schedule listed in Table 02220-A. Backfill schedule for pipes is listed in Table 02220-B.

TABLE 02220-A

COMPACTION AND BACKFILL SCHEDULE

Area	Material	Compaction
Pipe and liner trenches, not directly over the liner	Common Fill (Para. 2.01 B)	8 inch lifts, compacted to 95 % Modified Proctor maximum dry density. Fill should not be placed over any in-place soils until those layers have been compacted to 95 % Modified Proctor maximum dry density.
Beneath all structures and foundations	Common Fill (Para 2.01 B)	8 inch lifts, compacted to 95 % Modified Proctor maximum dry density. Fill should not be placed over any in-place soils until those layers have been compacted to 95 % Modified Proctor maximum dry density.
Beneath pavements not over the liner	Common Fill (Para 2.01 B)	8 inch lifts, compacted to 98 % Modified Proctor maximum dry density. Fill should not be placed over any in-place soils until those layers have been compacted to 98 % Modified Proctor maximum dry density.
Protective Cover Soil, directly over the liner	Select Common Fill (Para, 2.01 C)	12-inch lifts, compacted to 95 % Modified Standard Proctor maximum dry density. On slopes greater than 6:1, place in 12-inch lifts compacted to 90 % Modified Standard Proctor maximum dry density.
From cleared existing surface to stabilized subgrade for paved and gravel roadway surfaces	Common Fill (Para 2.01 B)	12 inch lifts, compacted to 95 % Modified Proctor maximum dry density.
Clay Backfill, at liner tie-in	Clay from excavation	12 inch lifts, compacted for stability to 90 % Standard Proctor density.
Containment Berms	Common Fill (Para 2.01 B)	12 inch lifts, compacted to 90 % Standard Proctor maximum density

Notes:

Standard Proctor shall be ASTM D-698.

Modified Proctor shall be ASTM -1557.

Table 02220-B

BACKFILL SCHEDULE FOR GRAVITY AND PRESSURE PIPING

Pipe Material	Pipe Size	Trench Condition	BEDDING Material	PIPE ENVELOPE				Others
				PRIMARY ZONE		SECONDARY ZONE		
				Material	Depth ^c	Material	Depth	
Ductile Iron, Stainless Steel, Culvert Pipe and Prestressed Concrete Cylinder Pipe	< 16"	Normal ^a	Compacted Common Fill	Filter Aggregate	0.5 O.D.	Filter Aggregate	0.5 O.D. + 12"	Class II Material should not have stones size > 2". Organic content < 1.1% by wt.
		Special ^b	Class I	Filter Aggregate	0.5 O.D.	Filter Aggregate	0.5 O.D. + 12"	
	≥ 16"	Normal ^a	Class II	Common Fill	0.25 O.D.	Common Fill	-	
		Special ^b	Class I	Common Fill	0.25 O.D.	Common Fill	-	
Fiberglass, PVC and Other Plastic Pipe	< 6"	Normal ^a	Filter Aggregate	Filter Aggregate	0.7 O.D.	Filter Aggregate	0.3 O.D. + 12"	
		Special ^b	Class I	Filter Aggregate	0.7 O.D.	Filter Aggregate	0.3 O.D. + 12"	
	≥ 6"	Normal ^a	Class II	Class II	0.7 O.D.	Class II	0.3 O.D. + 12"	
		Special ^b	Class I	Class II	0.7 O.D.	Class II	0.3 O.D. + 12"	
R.C.P.	< 48"	Normal ^a	Class II	Class II	0.5 O.D.	Common Fill	-	
and		Special ^b	Class I	Class II	0.5 O.D.	Common Fill	-	
C.C.P.	≥ 48"	Normal ^a	Class II	Class II	0.25 O.D.	Common Fill with max. stone size ≤ 2	0.75 O.D. + 12"	
		Special ^b	Class I	Class II	0.25 O.D.	Common Fill with max. stone size ≤ 2	0.75 O.D. + 12"	

Table 02220-B (Continued)

BACKFILL SCHEDULE FOR GRAVITY AND PRESSURE PIPING

Pipe Material	Pipe Size	Trench Condition	BEDDING Material	PIPE ENVELOPE				Others
				PRIMARY ZONE		SECONDARY ZONE		
				Material	Depth ^c	Material	Depth	
Pipe laid in rock (min. trench requirements) except for fiberglass and PVC pipe		Rock	Class I	Class II	0.5 O.D.	Common Fill with max. stone size ≤2"	0.5 O.D. + 12"	
Gravity pipe (not specified above)		Normal	Filter Aggregate	Filter Aggregate	0.5 O.D.	Common Fill	0.50 O.D. + 12"	
Pressure pipe (not specified above)		Normal	Suitable Undisturbed Earth or Compacted Common Fill	Common Fill with max. stone size ≤2"	0.5 O.D.	Common Fill with max. stone size ≤2"	0.5 O.D. + 12"	

NOTE: SEE DRAWINGS FOR LEACHATE COLLECTION PIPING MATERIAL INFORMATION

- ^a Dry soils.
^b Saturated soils.
^c Outside Diameter of pipe = O.D.

Notes:

- No special bedding shall be required in case of suitable undisturbed earth type trench bottom.
- Bedding thickness shall be 12 inches unless specified otherwise.
- The backfill shall be compacted to 95% Modified Proctor maximum dry density and shall be placed in 6-inch lifts for pipe envelope and in 12-inch lifts from secondary zone to grade. Common fill shall be used as final backfill material.
- It is intended that additional excavation be conducted to remove unsuitable material below the pipe bedding level which prevents bedding compaction as required herein and replace such materials with suitable materials. Over excavation, geotextile fabric, gravel blanket, granular fill and other acceptable stabilization method shall be placed within 4 feet of the bedding level or within 10 feet of the existing ground (whichever is greater depth) at no additional cost to the Owner. Construction required beyond these limits shall be executed in accordance with the General Conditions. When indicated on the Drawings, the Contractor shall remove unsuitable material below bedding level to the limits indicated and replace with coarse sand or other acceptable stabilization method up to the bedding level without any additional cost to the Owner.

- D. Pipe shall be laid in open trenches unless otherwise indicated on the Drawings or elsewhere in the Contract Documents.
- E. Excavations shall be backfilled to the original grade or as indicated on the Drawings. Deviation from this grade because of settling shall be corrected. Backfill operation shall be performed to comply with all rules and regulations and in such a manner that it does not create a nuisance or safety hazard.
- F. Embankments shall be constructed true to lines, grades and cross sections shown on the plans or ordered by the Owner. Embankments shall be placed in successive layers of not more than 12 inches in thickness, loose measure, for the full width of the embankment. As far as practicable, traffic over the work during the construction phase shall be distributed so as to cover the maximum surface area of each layer.
- G. If the Contractor requests acceptance to backfill material utilizing lifts and/or methods other than those specified herein, such request shall be in writing to the Engineer. Acceptance will be considered only after the Contractor has performed tests, at the Contractor's expense, to identify the material used and density achieved throughout the backfill area utilizing the method of backfill requested. The Engineer's acceptance will be in writing.
- H. Foundation Preparation
 - 1. The existing ground beneath building foundations and equipment base slabs and slabs on grade shall be removed and the area proof-rolled. Proof-rolling the buildings and containment areas should consist of at least 10 passes of a self-propelled vibratory compactor capable of delivering a minimum impact force of at least 36,000 pounds per drum to the soils. Each pass should overlap the preceding pass by 30 percent to insure complete coverage. Backfilled areas shall be compacted in 8-inch layers to a density of not less than 95 percent of Modified Proctor Dry Density as determined by ASTM D1557 for a depth of not less than 2 feet below the bottom of the foundations or concrete slabs. Any unsuitable foundation material shall be removed and replaced with suitable material.
 - 2. Slabs On Grade: Subgrades for concrete slabs shall be removed, backfilled, and compacted to the required grade. The top 2 feet of concrete slab subgrade in cut sections and all fill material shall be compacted in 8-inch layers to a density of not less than 95 percent of Modified Proctor Dry Density as determined by ASTM D1557.

3.07 TRENCH EXCAVATION

A. The Contractor shall not open more trench in advance of pipe laying than is necessary to expedite the Work. The maximum length of open trench under construction shall be 400 feet. All trench excavation shall be open cut from the surface.

1. Alignment, Grade, and Minimum Cover: The alignment and grade or elevation of each pipeline shall be fixed and determined from offset stakes. Vertical and horizontal alignment of pipes, and the maximum joint deflection used in connection therewith shall be in conformity with requirements of the section covering installation of pipe.
2. Where pipe grades or elevations are not definitely fixed by the Contract Drawings, trenches shall be excavated to a depth sufficient to provide a minimum depth of backfill cover over the top of the pipe of 42 inches where in paved or graded streets where surface grades are definitely established and 36 inches in other locations. Greater pipe cover depths may be necessary on vertical curves or to provide necessary clearance beneath existing pipes conduits, drains, drainage structures, or other obstructions encountered at normal pipe grades. Measurement of pipe cover depth shall be made vertically from the outside top of pipe to finished ground or pavement surface elevation.

B. Limiting Trench Widths:

1. Trenches shall be excavated to a width which will provide adequate working space and sidewall clearances for proper pipe installation, jointing, and embedment. However, minimum permissible sidewall clearances between the installed pipe and each trench wall, expressed in inches, shall be as follows:

<u>Pipe Size</u>	<u>Minimum Sidewall Clearance</u>
60"	24"
54"	21"
48"	19"
36" or smaller	12"

2. Stipulated minimum sidewall clearances are not minimum average clearances, but are minimum clear distances which will be required.
3. ~~Cutting trench banks on slopes to reduce earth load to prevent sliding and eaving will be permitted only in areas where the increased trench width will not interface with surface features or encroach on right-of-way limits. Slopes shall not extend lower than 1 foot above the top of the pipe.~~

C. Mechanical Excavation:

1. The use of mechanical equipment will not be permitted in locations where its operation would cause damage to trees, buildings, culverts, and other existing property, utilities, or structures above or below ground. In all such locations, hand excavating methods shall be used.
2. Mechanical equipment used for trench excavation shall be of the type, design, and construction, and shall be so operated, that the rough trench excavation bottom elevation can be controlled, that uniform trench widths and vertical sidewalls are obtained at least from an elevation 1 foot above the top of the installed pipe to the bottom of the trench, and that trench alignment is such that pipe when accurately laid to specified alignment will be centered in the trench with adequate clearance between the pipe and sidewalls of the trench. Undercutting the trench sidewall to obtain clearance will not be permitted.

D. Pavement Cutting:

1. Cuts in concrete pavement, asphalt pavement, and asphalt base pavements shall be no larger than necessary to provide adequate working space for proper installation of pipe and appurtenances. Cutting shall be started with an asphalt or concrete saw in a manner which will provide a clean groove for the full depth of pavement along each side of the trench and along the perimeter of cuts for structures.
2. Asphalt pavement and asphalt base pavement over trenches excavated for pipelines shall be removed so that a shoulder not less than 6 inches in width at any point is left between the cut edge of the pavement and the top edge of the trench. Trench width at the bottom shall not be greater than at the top and no undercutting will be permitted. Pavement cuts shall be made to and between straight or accurately marked curved lines which, unless otherwise required, shall be parallel to the centerline of the trench.
3. Pavement removed for connections to existing lines or structures shall not be greater than necessary for the installation as determined by the Engineer.

E. Artificial Foundations in Trenches: The Contractor shall excavate to such depth below grade as the Engineer may direct and the trench bottom shall be brought to grade with such material as the Engineer may instruct to be installed. All piling, concrete, or other foundations made necessary by unstable soil shall be installed as directed by the Engineer. Compensation for extra excavation and piling, concrete, or other foundations, except where provided by Contract unit prices, shall be made in accordance with the Contract provisions for extra work.